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1922

W. J. HOLLAND, *Editor*

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FORM NEW TO SCIENCE DESCRIBED IN THIS VOLUME.

Hypnelus ruficollis decolor Todd, subsp. nov. 228

ERRATA ET CORRIGENDA.

Page 22, line 8, for "*erythromelæna*" read *erythrolæma*.

Page 28, line 4, for "1879" read 1897.

Page 34, line 11, for "criticizing" read criticising.

Page 65, line 10, for "*Thraupis cana cana*" read *Thraupis episcopus cana*.

Page 65, line 32, for "*Amblycercus holosericeus flavirostris*" read *Amblycercus holosericeus* subsp.

Page 87, line 6, for "*Chlorophanes*" read *Chlorophonia*.

Page 157, line 28, for "CARACARAS" read FALCONS, CARACARAS.

Page 170, line 11, for "*cajanca*" read *cajanicus*.

Page 176, under **Crax alberti**, insert line as follows:

Five specimens: Bonda, Don Diego, La Tigrera, and Cincinnati.

Page 302, line 33, for "Columbian" read Colombian.

Page 425, line 16, for "*griescus*" read *griscus*.

Page 493, line 34, for "*desmaresti*" read *viridissima toddi*.

Longitude East from Bogotá

C A R I B B E A N

COAJIRA

PICHANA

SANTA MARTA

SAN JUAN
DE LA CICHAGACIENAGA
GRANDE

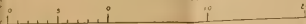
SIERRA NEVADA DE SANTA MARTA

ANDES

EASTERN

MAP
OF THE
SANTA MARTA REGION
OF COLOMBIA
TO SHOW THE LIFE-ZONES

Scale of Miles



Tropical

Temperate

Subtropical

Paramo

11

10

11

10

ANNALS

OF THE

CARNEGIE MUSEUM

VOLUME XIV.

FOREWORD.

BY W. J. HOLLAND.

The present volume is set aside for the presentation of a monographic paper on the Birds of the Santa Marta Region of Colombia by Messrs. W. E. Clyde Todd and M. A. Carriker, Jr.

Long before the buildings which now house the Carnegie Institute were even planned, much less erected, the question of the scope and special work of the Carnegie Museum was taken up and carefully discussed with the generous Founder by the writer, and it was decided that among other things it would be especially desirable to carry on researches upon the natural history and resources of tropical America. Mr. Carnegie always was deeply interested in the republics of the south, and signally evidenced his interest by the gift of the Pan-American Building in Washington, and by active participation in all efforts tending to bring about friendly and harmonious relations with our sister republics, which lie beneath the Southern Cross.

At the very initiation of our work in the Museum special attention was paid to these regions, and a number of competent explorers and collectors were enlisted in the task of gathering material to illustrate the archæology and the biology of Central and South American lands. The late Mr. Herbert Huntington Smith and his accomplished wife were as early as 1896 sent to Santa Marta, Colombia, to undertake the making of natural history and ethnological collections. In 1903 Prof. C. V. Hartman began his extensive and fruitful archæological investigations in Costa Rica. Mr. M. A. Carriker, Jr., shortly afterwards

began his exploration of the avifauna of the same country, resulting in the ultimate publication in 1907 of his fine paper upon the Birds of Costa Rica. Mr. Carriker soon after the appearance of his work upon the avifauna of Costa Rica repaired to Santa Marta, where he has since made his home, while continually collecting for the Carnegie Museum.

It is not necessary in this connection to do more than make allusion to the extensive journeys and collections made at later dates by John D. Haseman, S. M. Klages, José Steinbach, and numerous other "naturalistes voyageurs," who have been in our employment; nor to the piscatorial labors of Dr. C. H. Eigenmann and his associates, who have made extensive contributions to our knowledge of the freshwater fishes of South America.

The present volume of the ANNALS reflects in part the results of the efforts of the Carnegie Museum to give to the world a knowledge of one phase of the natural history of an interesting South American region, one of many which have been and are being systematically explored in the interests of science by the Museum, which bears the name of that great lover of his kind, Andrew Carnegie.

Mr. W. E. C. Todd is the senior author and Mr. M. A. Carriker, Jr., the junior author of the publication, the former having devoted himself to the study of the material from a taxonomic standpoint; the latter having supplied numerous notes in regard to the localities where the collections were made and to the habits of the species. Mr. George Miksch Sutton deserves great praise for the drawings of species hitherto unfigured, which have been reproduced upon Plates II to VII.

CARNEGIE MUSEUM,

April 4, 1922.

THE BIRDS OF THE SANTA MARTA REGION OF
COLOMBIA: A STUDY IN ALTITUDINAL
DISTRIBUTION.

BY W. E. CLYDE TODD AND M. A. CARRIKER, JR.

(PLATES I—IX.)

INTRODUCTION.

The concerted attack of late being made by ornithologists upon South America is yielding results of great scientific interest and value, and bids fair to give us in due course as good a knowledge of the avifauna of the "Great Bird Continent" as we possess of any other of the primary zoölogical regions of the earth's surface. Unlike much of the work of the last century, which had for its principal aim the discovery and description of new species, the ornithological exploration of today is being carried on more along faunal lines, and directed toward a different end, namely, the discovery of the geographical relations of species and groups. Whereas systematic ornithology is concerned with the placing of the various species of birds in their proper and natural position in the avian series, and with the working out of their genetic relationships, regional ornithology seeks to discover the significance of the association of such species as they exist in nature, how this association was brought about, and the laws which govern their distribution in the present and their dispersion in the past. Not that these two lines of research are independent of each other; they are, indeed, closely related problems, in which investigation often meets on common ground and leads to mutually complementary results.

South America, with its great diversity of physical and climatic conditions, its lofty mountains and wide river valleys, its extensive forests, marshes, and open plains, presents an unusually inviting field for zoögeographical studies of this kind, the more so as this phase of the subject has received so little attention hitherto, and until very recently has been known only in its broad general outlines. But the field to be covered is so vast, and much of it still so imperfectly explored, that as yet there has been little time and opportunity in many

cases for more than a cursory and preliminary survey. It is accordingly a matter for self-congratulation that we find ourselves able to present herewith in integral form, and to such good advantage, the scientific results of an intensive faunal study of a restricted area in Colombia, the Santa Marta region. No other part of that country has received such long-continued attention from a trained collector as has this particular region from the junior author, as Dr. Frank M. Chapman justly remarks. Its geographical position, lying as it does right at the gateway, so to speak, from the plains of Venezuela into northern Colombia, its semi-insular character, the isolation of its mountains, and their different trend and greater height as compared with the neighboring Andean system, all combine to make the study of its bird-life a problem of exceptional interest. The general laws and principles laid down by Dr. Chapman in his recent work on "The Distribution of Bird-Life in Colombia" (to which the present paper may be regarded as in a sense complementary) have been confirmed and amplified by this study, which is offered as the first of a series of contributions to regional South American ornithology to be published by the Carnegie Museum.

The present joint paper is based primarily on the large collection of birds made in the Santa Marta region by the junior author from 1911 to 1915, by far the greater part of which is deposited in the Carnegie Museum, the balance having mostly gone to the Academy of Natural Sciences of Philadelphia, with a few specimens still remaining in the collector's hands. This collection was made at various elevations from sea-level up to snow-line, and in all the various kinds of habitat represented. It is much to be regretted that our knowledge of the bird-life of the southern slopes of the mountains, and of the valley at their base, still remains so meager, but it is believed that even in this field sufficient work has been done to permit us to judge of its faunal relationships. In addition to the collection made by the junior author, the material received by the Carnegie Museum from Mr. Herbert H. Smith, and not previously reported upon, is here formally listed. There have also been available the specimens of Mr. Smith's collecting in the American Museum of Natural History, as well as many of those sent in by Mr. Wilmot W. Brown to the Bangs Collection, which have been freely consulted where necessary in the preparation of this report. In this connection the literature of the subject has

been completely gone over and the Santa Marta records collated in the effort to give a full summary of our present knowledge of each species, so far as this particular region is concerned. The work of identifying and reporting upon the collection has been greatly facilitated by the high quality of the specimens themselves, and by the circumstance that the Carnegie Museum possesses an unusually fine series of the birds of the Eastern Andes of Colombia and the mountains of Venezuela, which specimens have naturally been very important for purposes of comparison.

The senior author is responsible for that part of the report which is of a technical nature, namely, the compilation of the references and bibliography, the identification and listing of the specimens, the critical notes under each species (including the entire treatment of such as were not found by Mr. Carriker), and the theoretical discussion of the life-zones. The historical chapters are also nearly all his work. To him also have fallen the main labor of composition and revision of the manuscript, and the incorporation of much additional matter from various sources not accessible to the junior author. Mr. Carriker has contributed the notes on the habits and local distribution under each species (usually paragraphed separately), the general description of the region (in part), the account of his explorations in the field, the descriptive list of localities (in part), and the preliminary descriptive discussion of the life-zones. Each author, however, has examined and checked the work of the other, so that it is hoped that few inaccuracies or inconsistencies have escaped notice.

For our knowledge of the geography of this region we are mainly indebted to the researches of the late Frederic A. Simons, whose two papers¹ on this subject have been of great service in the preparation of the present report, and also to the work of Dr. Wilhelm Sievers, whose article on "Die Sierra Nevada de Santa Marta und die Sierra de Perijá"² is even more valuable. We have to thank Dr. Arnold E. Ortmann and Dr. Otto E. Jennings of the Carnegie Museum

¹ SIMONS, F. A. A., "Notes on the Topography of the Sierra Nevada of Santa Marta, U. S. Colombia," *Proceedings Royal Geographical Society*, I, November, 1879, 689-701, one map.—"On the Sierra Nevada of Santa Marta and its Watershed (State of Magdalena, U. S. of Colombia)," *Proceedings Royal Geographical Society*, III, December, 1881, 705-723, one map.

² SIEVERS, WILHELM. *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, XXIII, 1888, 1-158, two maps.

for an abstract of the geological and botanical matter respectively found in this last article. Our acknowledgments are also due to the following parties for their courtesy in the loan of specimens required in this connection: Dr. Frank M. Chapman and Mr. Waldron DeWitt Miller of the American Museum of Natural History; Dr. Witmer Stone of the Academy of Natural Sciences of Philadelphia; Dr. Charles W. Richmond of the U. S. National Museum; Mr. E. W. Nelson of the Bureau of Biological Survey; the late Mr. Charles B. Cory of the Field Museum of Natural History; Messrs. Outram Bangs and Thomas E. Penard of the Museum of Comparative Zoölogy; and Mr. James H. Fleming of Toronto, Ontario. In addition, Mr. Bangs and Dr. Richmond have aided us by forwarding data for specimens in the collections under their care, and by making certain suggestions and criticisms of value. Dr. Harry C. Oberholser has also given assistance of this latter kind. The originals for the plates and maps which accompany this report have been prepared by Mr. George M. Sutton under the direction of the senior author. And finally, we have to thank Mr. Wilmot W. Brown and the late Mr. Herbert H. Smith (and Mrs. Smith) for much detailed information of value concerning their work in this region, particularly with reference to the localities where they collected. Mr. Smith's published account of the region (in Allen, *Bulletin American Museum of Natural History*, XX, 1904, 408-414), has also been very useful.

GEOGRAPHY AND PHYSIOGRAPHY.

Geographical Limits.—The Department of Magdalena comprises that part of the Republic of Colombia lying between the Magdalena River and the Venezuelan boundary, fronting on the Caribbean Sea, and with a narrower strip extending south to a line a little below the eighth parallel of north latitude. On its extreme northeastern frontier lies the Góajira Peninsula, a low, sandy, arid region, constituting the northernmost point of the South American continent, thrust out between the waters of the Caribbean on the one hand and those of the Gulf of Maracaibo on the other. Omitting this area in general from consideration, our main concern is with the northern portion of the Department in question, comprising an area roughly triangular in outline, bounded on the north by the Caribbean Sea, on the west by the swamps of the Magdalena Delta, and on the southeast by the

Eastern Andes, known here as the Sierra Negra. What we are actually discussing, therefore, is the isolated mountain mass known as the Sierra Nevada de Santa Marta, together with its contiguous lowlands. These lowlands include the entire littoral from Rio Hacha, in the extreme northeast, around to Cienaga on the west, as well as the low country in the vicinity of the Cienaga Grande and in the valleys of the Rio Rancheria and Rio Cesar, south as far as the village of Camperucho. The Eastern Andes, therefore, while not formally included in the region under consideration, are incidentally touched in referring to the available records for two localities situated in their western foothills.

Mountain System.—The dominating feature in the topography of the region is, of course, the Sierra Nevada de Santa Marta, the main axis of which runs east and west, parallel with the coast-line, instead of north and south, like the Cordillera of Colombia. The range, indeed, is not a part of the great Andean system, either geographically or geologically; it is separated from the latter by the broad plains of the Magdalena River towards the south, and by a long, open valley on the southeast. "Earthquakes are common in the Andean chain and their vibrations are sometimes felt simultaneously from Peru to the Caribbean Islands; but they do not affect the Sierra Nevada. The occasional slight tremors recorded are purely local" (Smith). The mountains rise very abruptly from sea-level to the regions of perpetual snow, attaining an altitude of not less than 17,500 feet at a point only thirty miles from the coast. The apex of the range, at the Snow Peaks, is about forty-five miles in an air-line southeast of Santa Marta, but an outlying spur extends to within a comparatively short distance of the town. This spur culminates in two principal peaks, the San Lorenzo and the Horqueta, the former rising to 9,300 feet and the latter to about 7,000 feet.³ "To the northwest of the principal range are several lower ridges, roughly parallel to it and abutting diagonally on the northern coast. This portion of the coast is remarkably picturesque, a succession of rocky headlands with deep bays between the ridges; the bays are often backed by sand beaches and mangrove swamps of no small extent. Further east the headlands are no longer seen, and low, rolling lands extend back to the base of the Sierra Nevada" (Smith). The San Lorenzo is connected to a massive

³ 8,400 feet, according to Mr. Smith, but this is clearly a mistake.

buttress of the Sierra Nevada by a ridge having a minimum altitude of 5,000 feet, while its connection with the Horqueta is higher still. A second spur of the main range, which extends southward from the Snow Peaks, maintains an even greater mean elevation, there being several peaks near its southern end 10,000 feet or more in height. Beyond these again, and separated by a valley having an elevation of only 3,000 feet, is another, isolated ridge, rising to 10,000 feet. Towards the east the altitude of the Sierra Nevada gradually diminishes, until it is lost in the low foothills of the Goajira Peninsula.

Rivers.—"As may be easily imagined, from a range capped with eternal snow, the Sierra Nevada gives birth to innumerable rivers. Few States in the world can boast such a natural or more easily applied irrigation, and few tropical countries have such a supply of ice-cold water laid on to their very doors, as the seething hot valley of Dupar and the towns along the Cienaga [Grande] to Santa Marta.

. . .

"The Rio Cesar is, after the Cauca and Sogamozo, the largest tributary of the Rio Magdalena. It rises in a comparatively low portion of the Nevada, the fountain-head being scarcely 3,000 feet above the sea. . . . The three principal tributaries of the Rio Cesar, viz., the Badillo, the Guatapuri, and the Ariguani, each almost as large as the parent river, are from the [south slopes of] the Nevada, whereas the watershed from the Andes is exceedingly scant, consisting only in small rivulets, dangerous enough perhaps when swollen by continuous and excessive rains, but usually all dried up the better part of summer.

"Rio Badillo, the first important affluent of the Rio Cesar, springs somewhere from the snowy regions, east of the Guatapuri, although I have never been able to find out exactly where. It is a much larger river than its neighbour and brings down an enormous mass of water, being in the driest summer two to three feet in depth. . . .

"Rio Guatapuri, although not so large as the preceding, makes up by its impetuosity for any want of water, and is the most dangerous river in the whole State, rising in a few hours as many feet. It springs from several lakes in the eternal snow region and passes among the highest peaks of the Nevada, thus its waters are at a very low temperature, even at its junction with the Rio Cesar" (Simons). Beyond this point the Rio Cesar becomes a river of respectable size,

flowing southwestward through a broad belt of forest and savanna. The Rio Ariguani, its last and largest tributary, springs from Mount Chinchicua, at the end of the southern spur of the Sierra Nevada, and curves around the outlying mountain mass lying off to the southward.

The rivers of the main western slope of the Sierra Nevada all drain into the Cienaga Grande, a large lake of brackish water, which is a part of the delta system of the Magdalena. There are a number of streams descending this slope, which combine into two main rivers, the Rio Frio and Rio Aracataca, before finally reaching the Cienaga. Little is known about the upper reaches of these rivers, beyond the fact that the Aracataca has its source in the region south of the Snow Peaks, while their lower courses are through impenetrable forest.

The streams on the northwest and north sides of the San Lorenzo and the Sierra Nevada proper, where the slopes are more precipitous, are much shorter in general than those coming down the southern and western slopes. The Rio Manzanares, which takes its rise on the north slopes of the Horqueta, and flows down to the sea at Santa Marta through a well-wooded valley, where are located a number of small towns and villages, is one of the best known. The Rio Gaira, which is larger even than the Manzanares, receives nearly all its water from the San Lorenzo, falling down from its source in a long series of cascades to reach the sea near the town of Gaira. On the north slopes of the Sierra Nevada there are not less than six streams of considerable importance between Santa Marta and Rio Hacha. The first of these, the Rio Piedras, drains the eastern slopes of the Horqueta and San Lorenzo, and enters the Caribbean at the point where the humid forest first descends to the coast. Then follow the Mendiguaca, Buritaca, Don Diego, Palomina, and Ancha, of which the last three are known to have their sources in the snow-fields of the Sierra Nevada. Of these the best known is the Rio Ancha, which takes its rise to the northeast of the Snow Peaks, and which the trail follows in making the ascent from this side. Considerably beyond this again is the Rio Rancheria, which drains the southern slopes of the Sierra Nevada in part, curving around their eastern flank to flow into the sea near Rio Hacha. The valleys of the Rio Cesar and Rio Rancheria are practically conterminous, so that a depression of less than a thousand feet would suffice to isolate the Sierra Nevada completely from the South American continent.

Lakes and Swamps.—There are several small mountain lakes in the paramos near the crest of the Sierra Nevada, fed by the melting snow-fields above, and feeding in their turn certain of the rivers which take their rise here. Aside from these, there are no true lakes in this region, but only lagoons at various points along the coast. Isolated marshes occur at intervals in connection with these, while the entire country surrounding the Cienaga Grande is one immense marsh, and during the rainy season is often completely overflowed for several miles inland.

GEOLOGICAL HISTORY.⁴

In general structure and in the character of its rock formations the Sierra Nevada de Santa Marta resembles most other sections of old land found in the Caribbean region (northern Venezuela, the West Indies, and Central America), and there is reason to believe that at one time it constituted a part of the Antillean land mass, of which the islands of Curaçao, Aruba, etc., are also remnants. At any rate, it is a very old section of the earth's crust, having been elevated above sea-level since the beginning of the Palæozoic (at least), and not thereafter submerged. The region east and south of the Sierra Nevada was probably covered by the sea in the Mesozoic, surely during the Cretaceous, as evidenced by the presence of marine deposits of that age. Subsequently, this region was elevated above the sea, and the Sierra de Perijá (Sierra Negra) was folded up. The folding did not extend to the Sierra Nevada, except in its northeastern part. This movement took place in the second half of the Tertiary, as is known to be the case with the Andean uplift in general, while the region to the east of the Sierra Nevada was land already in the first part of the Tertiary.

The two mountain systems, therefore, are entirely distinct and independent in their respective origins, the Sierra Nevada being very old (geologically speaking), the Sierra de Perijá (a branch of the Andean system) very young; only at the northern end of the latter did the forces which caused its elevation slightly encroach upon the older mountain. All the evidence goes to show that all through the Tertiary and thereafter the valley of the Rio Cesar (and its northern continuation) has been in existence, and that at no time could it have

⁴ *Ex* Sievers, by Dr. Arnold E. Ortmann.

stood at an elevation sufficient to connect the Subtropical Zones of the two mountains.

CLIMATE.

Rainfall and Humidity.—Throughout the greater part of the region the rains begin in March or early April and continue almost daily until some time in December, while even during the intervening dry season a few showers fall from time to time. In the semi-arid belt of the northwest coast and foothills the rains begin much later, and showers rarely fall oftener than once or twice a week, except during October, when they are of nearly daily occurrence; but all rain ceases after the end of October or middle of November. There are some years, however, when little rain falls in this section, and the vegetation becomes completely parched for months. On the other hand the northern slopes of the Sierra Nevada, from the Rio Piedras eastward to Dibulla, are very humid down to the very coast, the rains beginning earlier and not ceasing until the end of December, while the total precipitation is vastly greater. This condition is due to the fact that the mountain ridge intercepts the winds blowing in from the Caribbean Sea and condenses the moisture they contain. A somewhat similar condition, the result in this case of the land breeze from the Magdalena basin, obtains on the south slopes of the Sierra Nevada, in the valleys of the Guatapuri and Badillo, if one may judge from the remarks of Simons, who adds that "the first rains begin in April; May is very wet, June to September showery. The second rains begin in September; October is the worst month; and November is sometimes wet." The lowlands on the west slope of the main divide have more or less the same rainy season as the highlands, except that the precipitation is slightly less. The whole of the Goajira Peninsula is practically a desert, the rainy season being very short and the total precipitation very small.

Snow.—As seen from the sea, the Sierra Nevada appears covered with snow for a considerable distance from the crest, but it is fairly certain that "a good deal of the supposed snow . . . is only reflected light from micaceous granite" (Simons). During the rainy season the snow-line doubtless drops down for a time to about 15,000 feet, but during the latter part of the dry season it ascends, except in the sheltered valleys and northwest slopes, to a height of 16,000 feet.

Snow often falls as low as 12,000 or 13,000 feet during December and January, and Simons says he has seen it down even to 9,000 feet at this season, but it never remains on the ground more than a day or two under such circumstances.

Temperature.—The lowlands of the present region, which is about eleven degrees north of the Equator, are one of the hottest regions in South America. In January, which is one of the cooler months at Santa Marta, the temperature usually varies, according to Sievers, from 79° F. at 7 A. M. to 84° F. at 2 P. M., falling to 81.5° F. at 9 P. M. The month of May is said to be the hottest at Santa Marta. At Rio Hacha the average temperature at the end of April and during the second half of May, taken at the same intervals during the day, was respectively 80.5° , 86° , and 84° . In the Rio Cesar Valley somewhat higher figures, with greater extremes, prevail, the highest temperature recorded being 95° , which was reached on two occasions. Coming now to localities in the Subtropical Zone, the temperature at Cincinnati (4,500 feet), according to the experience of the junior author, varies through an extreme range of from 59° to 85° , although the general average is between 62° and 80° . On the summit of the San Lorenzo (9,300 feet) a minimum during two nights of 46° was observed. It was found that the temperature at Pueblo Viejo (2,000 feet), on the north slope of the Sierra Nevada, corresponds very closely to that of Cincinnati, which would account for the general lowering of the Subtropical Zone on that side. Sievers gives the figures for this point, taken from May 6 to 8, as follows: 7 A. M., 71.5° ; 2 P. M., 74° ; 9 P. M., 72.5° . Figures for the higher altitudes show a considerably greater daily range, as might be expected, but the available data are not so satisfactory. At Aduriameina (11,050 feet) the average for five days in February was: 7 A. M., 40° ; 2 P. M., 55.5° ; 9 P. M., 46.5° , with an observed minimum of 33° and a maximum of 64.5° , while there was a difference of 3.6° between the leeward and windward exposures respectively. At the base of the snow-fields the figures were: 7 A. M., 37.5° ; 4 P. M., 50° ; 6 P. M., 39° ; lowest, 33° . In general, the temperature of points on the southern slopes of the Sierra Nevada presents a greater range of variation than those on the northern slopes.

POPULATION AND RESOURCES.

With the exception of parts of the encircling lowlands, the whole region is very sparsely populated. Santa Marta, the capital city, is exceeded in size only by Ciénaga, the two being connected by a railway, which continues on to Fundación, with several towns and settlements along its course. Rio Hacha is the most important town on the north coast, and is the gateway to the Rio Rancheria-Rio Cesar Valley, where are located numerous towns and villages. The principal occupation of the inhabitants is agriculture and cattle-raising, commerce being in a backward state. The chief products are coffee, sugar-cane, cacao, plantains, bananas, etc. A few plantations have been opened up on the north and west slopes of the San Lorenzo and Horqueta, but for the most part the cultivated districts are confined to the lower levels.

Most of the elevated interior region (all in fact except the San Lorenzo and its connecting ridge) is included in the "Territorio Nacional de la Nevada," an Indian reservation under a separate administration from the rest of the State. Its inhabitants are mostly Indians of the Arhuaco tribe, whose villages are scattered here and there on both slopes of the mountain, and can be reached only by following narrow and difficult trails through the forest. One such trail enters the Sierra Nevada at Dibulla, ascending the Rio Ancha to its head and crossing over the Paramo de Chiriqua, to the east of the Snow Peaks, and thence descending the south slope to Valle de Upar by way of San José and Atanquez. Another trail ascends from the town of Rio Frio (on the railway) and follows the river up to the paramos, crossing the latter and descending the north slope to the village of Palomina, and thence eastward to Santa Rosa and Pueblo Viejo.

A third trail follows along the southern spur of the main range, going by way of San Sebastian and Aduriameina, and eventually reaching the Snow Peaks from that side. With the exception of the latter trail (in part), of that from Dibulla to San Miguel, and that from Valle de Upar to San José, these trails are impassable for horses and mules, and even the exceptions in question are so bad that only very small loads can be carried by pack-animals. There is absolutely no other means of penetrating the Sierra Nevada to the higher altitudes except by these trails.

ECOLOGICAL CONDITIONS.

The ecological conditions in the region under discussion are extremely diverse, ranging from arid, cactus-covered wastes to humid tropical forest, and from torrid lowlands to eternal snows. Since a knowledge of this subject is essential to a proper understanding of the distribution of bird-life in the region we propose to discuss it at some length.

Caribbean Lowlands.—The general physical and floral aspect of the littoral and lower foothills exhibits a wide variation according to locality. The northeastern portion, where it adjoins the Goajira Peninsula, is an arid, sandy waste, with very little rainfall. Except immediately along the streams the vegetation consists of a variety of cacti and thorny scrub. Of the cacti there are two species in great abundance, the giant cactus and a variety of prickly pear, the former growing to a height of from twenty to thirty feet, with many branches, and with the main trunk often ten to twelve inches in diameter. The thorny scrub consists of several kinds, but practically all the trees and shrubs are furnished with thorns to a greater or less extent. The fringe of vegetation along the streams consists largely of deciduous trees and shrubs, many of which are represented in the "dry forest" of the semi-arid lowlands and foothills contiguous to Santa Marta.

The section of semi-arid lowlands and foothills extends along the coast from the Cabo de San Juan de Guia to a point near Rio Frio, south of Cienaga, and thus occupies the northwestern part of the general region. The flora of this part differs but little in *species* from that of the arid portion just described, but greatly in the relative proportions of the various species represented. Cacti are present on the coastal plain, but are much less abundant, and consist largely of the giant cactus, while the more arboreal forms of a thorny nature are preponderant. Along the streams there are the usual deciduous trees, with additions of other non-deciduous kinds which have followed the watercourses down from the hills. On the whole the coastal plain here has relatively less sand and a much greater density of vegetation.

That part of the coast lying between these two sections is heavily forested, and will be described in detail further on.

Foothills.—The semi-arid foothills are of two classes, those lying contiguous to the sea and separated from the main mountain mass, and the foothills of the San Lorenzo and Horqueta and of the Sierra

Nevada proper on the western and southern sides. The outlying foothills are thickly covered with shrubbery and low trees, largely of a thorny character, and almost without exception deciduous, presenting a parched and leafless aspect during the greater part of the year. But with the first heavy rains they burst into leaf and flower with marvelous rapidity. In fact this flora is more properly that of an arid than a semi-arid region. It has been aptly called by Mr. Herbert H. Smith the "dry forest," and is believed to represent an ancient and vanishing flora.

The foothills proper, on the other hand, are clothed with forests composed of mingled deciduous and non-deciduous trees, together with a great variety of shrubbery in the form of undergrowth. Few thorn-bearing species are present. This the writer regards as the true "dry forest," which is, properly speaking, characteristic only of the foothills. This flora extends upwards to an extreme altitude of perhaps 3,000 feet, but attains such an elevation only on narrow exposed ridges and in but few places. It interdigitates with the humid forest above, the latter always extending downward in the valleys, gradually narrowing in width until at the lower edge of the foothills it persists only along the immediate banks of the streams. This condition is found not only in the foothills of the Horqueta and San Lorenzo, but also extends around on the west and south sides of the Nevada, but not on the north coast for some distance, where the humid forest extends practically unbroken down to the sea.

Western Littoral and Foothills.—On the west side of the mountains, from a point about midway between the town of Cienaga and Rio Frio southward, the littoral is clothed with heavy, humid, tropical forest, which in turn is separated from the humid forest of the upper Tropical Zone by the dry forest of the intervening foothills. This littoral forest is a continuation of that of the Magdalena basin, and does not extend around to the south side of the Sierra Nevada beyond Valencia, the valley of the Rio Cesar above that point being largely occupied by open savannas, interspersed with clumps of more or less "dry forest," and with the usual fringe of humid forest along the banks of the streams, its width varying with the nature of the contiguous terrain. If this is low and flat, then the fringe of forest will be wide; if shelving or sloping, it will be narrow. However, the "dry forest" of the western foothills is more luxuriant than that of the

northern foothills, and contains a greater percentage of non-deciduous trees, and in some places along the southwestern portion it only persists on the narrower ridges as islands in the humid forest flowing down from above and joining that of the littoral.

The humid forest of the Magdalena basin differs decidedly from that on the north coast, which is not properly a lowland forest, but consists almost entirely of species ordinarily found at higher altitudes, and which have descended from above on account of the greater humidity and consequent lower temperature of the lowlands and foothills on this side. This mountain forest is composed of taller trees, set more closely together, with less undergrowth, and supports a much more limited fauna than the forest of the Magdalena basin. The latter is composed of fewer large trees, more undergrowth, vines, and succulent-leaved plants, with a corresponding abundance of insect life and of fruits to support the more varied and abundant fauna.

The Magdalena Delta.—Practically the entire delta system of the Magdalena is involved in the section between the main channel and the Ciénaga Grande. It is very evident, even to the casual observer, that the area now occupied by the latter, together with the network of lagoons lying between it and the river, was at one time, doubtless in the present geological epoch, a portion of the Caribbean Sea, shallow perhaps, but nevertheless an arm of the ocean. It is also evident that this area, as well as the littoral to the eastward, has been raised at no very remote period. The proof that this uplift has been comparatively recent is present in the form of numerous small saline areas on the western littoral, within a few miles of the foot of the hills around Rio Frio and farther south, which are many miles from the present shore-line of the Ciénaga Grande. The steady stream of sediment carried down by the Magdalena and the rivers draining the western slopes of the Sierra Nevada, which has been pouring into the Ciénaga Grande for past centuries, is gradually filling up this brackish lake. Mangroves have secured a foothold on all sides, thus holding the sediment and aiding the process of filling in. There are thousands of acres of mangrove swamp today in this region, interspersed with endless waterways, affording cover and food to myriads of aquatic and semi-aquatic birds.

Savannas.—The savannas of the Rio Cesar Valley are extensive, and reach up over the foothills and even into the Sierra Nevada it-

self, replacing to a large extent the "dry forest" of the foothills. Savannas are also found on the north slopes of the Sierra Nevada, beginning at Pueblo Viejo on the Rio Ancha and extending upward to the paramos, at least in the valleys of the watershed of this stream. The presence of these savannas is rather puzzling, and has not hitherto been satisfactorily explained. It is almost a certainty that where such savannas occur, at least at points above 2,000 feet, and are in an area obviously belonging to and surrounded by a forest belt, they are due to artificial causes, deforestation and persistent burning over. The fact that in regions of extensive savannas the humidity and precipitation is less, is an effect, rather than the cause of the formation of the savannas, because the absence of forest lessens the atmospheric condensation and thus diminishes the rainfall.

Colombia is an old country, a fact often overlooked by authors and travellers, and was settled before North America. Cutting of timber and systematic burning covering a period of from one to three centuries must inevitably have destroyed large areas of forest, while the flora following in such cases would be the hardy grasses, which constitute the vegetation of the savannas of today. Several instances tending to prove this theory have come under the observation of the junior author within a period of only eight years, so that, if obvious results can be obtained in that length of time, what might not have taken place during one to three centuries? ⁵

Mountain Forests.—The "dry forest" of the foothills gradually and almost imperceptibly merges into the dense, cool, humid forest of the higher altitudes, which with the exception of the areas of savanna previously noted, covers everything between the altitudes of 2,000 to 3,000 feet upward to timber-line. At least this is true on the Caribbean slope; but according to Sievers the case on the whole south

⁵ Sievers appears to lay much stress on the fact that the savanna appears only on the south slopes, while the north slopes are wooded. This is only added proof of my theory of the origin of these savannas, since it is a well-known fact that the Indians always select the south slopes first for their cultivations, as they get more sun at the time it is needed for the crops. This same process is going on today, for the Indians of the Macotama Valley have to go farther and farther each year to fell forest for their cultivations, as under their primitive mode of agriculture the soil soon becomes unproductive, and the land is burnt over every year when they burn the savannas to get fresh new grass.—M. A. C., Jr.

slope is very different, the vegetation being mostly confined to the river valleys, creek beds, and ravines where there is water. The woods and bushy growth thus appear in strips on the grassy mountains. It is thus between San Sebastian and Atanquez, at Rosario, in the Chinchicua range, in the marginal ranges, at Marocaso, and also at San José in the valley of the Guatapuri. In fact, on the whole south slope of the Sierra Nevada there is only one large forest, that of the Alguacil on the Chinchicua range above Pueblo Viejo. This is a forest of the cinchona zone, and is always fresh and moist, forming a welcome exception to the rule in the southern Nevada.

Two kinds of humid forest may be distinguished, that of the Upper Tropical and of the Subtropical Zone respectively. Temperate Zone forest, such as is represented throughout the Central and Eastern Andes of Colombia, is practically wanting, at least in that portion of the Sierra Nevada explored by the junior author, timber-line descending as a rule to more or less the altitude at which the Temperate Zone forest begins in the Andes. Whether this circumstance is due to climatic conditions, or to some extent also to a difference in the underlying rock, is not entirely clear. It has an important bearing upon the character and local range of the alticoline forms of bird-life, as will be pointed out later.

The forest of the Upper Tropical Zone, as already stated, consists largely of tall straight trees set closely together, and with very little tangled undergrowth as a rule. Palms are not abundant, and grow largely along ridges where there is an outcrop of clay. They are more abundant on the east slopes of the Horqueta and San Lorenzo than on the north and west slopes, also over the whole north slope of the Sierra Nevada proper. The undergrowth consists of shrubs of various species, but very few small palms, such as are so abundant in the Subtropical Zone. Ferns are abundant, but epiphytes are not so much in evidence, neither is there a great abundance of moss and lichens, such as are prevalent in the Subtropical. It is a forest of this character which extends upward to 4,500 feet (more or less), or to the edge of the "Cloud Zone," but does not drop down into the littoral, except for an interval along the north coast, where it actually reaches the sea.

Naturally there can be no hard and fast line drawn between the Upper Tropical and Subtropical forests, since the one merges imper-

ceptibly into the other. The first changes to be noticed are the appearance of certain different species of trees and the disappearance of certain others, accompanied by an increase of epiphytes, mosses, and lichens. Coincident with this there is a gradual diminution in the size of the trees, while the shrubby character of the undergrowth gives way to a low, broad-leaved palm known locally as "cola gallo" (rooster-tail). Entering the Subtropical and ascending through it, we get little or no change in species up to 6,000 feet, but at the latter elevation the species of trees begin to change rapidly. Cedar, alligator-pear, caratillo, and laurel trees disappear entirely, and are replaced by other forms, smaller in size and of decidedly different general appearance. The trees are farther apart, while the undergrowth is denser, and with a greater variety, while vari-colored lichens and mosses adorn the trunks and branches of the trees. The epiphytes have dropped down to the trunks of the trees, instead of being confined to the branches, as usual at the lower levels. Ascending still higher, the trees keep gradually diminishing in size; their branches begin nearer the ground; they are more twisted and gnarled, especially where they grow on the exposed ridges; wild cane of several varieties, resembling bamboo, puts in an appearance, while the epiphytes are now on or near the ground. On the east slopes of the San Lorenzo and the adjoining Sierra Nevada, where the humidity is much higher, the conditions are slightly different: the forest between 6,000 and 8,000 feet, especially on exposed ridges, is fairly smothered with moss of an olive-brownish color, with filaments from two to six inches in length. Slender shrubs, and branches the size of a man's finger or smaller, will have a solid covering of moss from two to three inches in thickness. Naturally this abundance of moss practically eliminates all lichens and epiphytes, and even tends to stunt the forest growth itself. Under such conditions bird-life is practically non-existent, except in the tree-tops. Conditions like these are to be met with above Las Vegas and on the ridge connecting the Sierra Nevada with the San Lorenzo. On the southeast and east slopes of the latter, between the altitudes of 5,000 and 6,000 feet, are numerous groves of a magnificent palm, much resembling the famous royal palm in every way, except the fruit. This palm was not observed in any other portion of the Nevada, but is probably present along the east slopes at this altitude. In the upper Subtropical Zone of the San Lorenzo there is also to be

found in large numbers a tall, slender, beautiful palm, known locally as the wax-palm, very similar, if not identical with the palm found so abundantly in the Central Andes in the vicinity of the Quindio Pass. The writer has no note or recollection of the presence of this particular palm in the Sierra Nevada proper.

The arboreal species composing the forests of the Sierra Nevada de Santa Marta are to a great extent different from those found in the Andes of Colombia, although there are species common to both, especially in the Eastern Andes. However, the species of oak so abundant in Santander and Boyaca, as well as the nogal and other characteristic Andean forms, are entirely wanting in the region under consideration. As far as the junior author has been able to judge, while having little technical knowledge of the flora, the higher the altitude, the greater the resemblance between the arboreal flora of the Eastern Andes on the one hand and that of the Sierra Nevada de Santa Marta on the other.

Paramos.—Timber-line in the Sierra Nevada is at about 10,000 feet in most places, and is abrupt and well marked, changing rapidly in an ascent of not more than five hundred feet from heavy woodland to scattered shrubs and stunted, wind-twisted trees. Above timber-line we have paramo conditions, where the vegetation is very characteristic, with little or no resemblance to the tropical flora of the lowlands. Gnarled and stunted trees in the sheltered valleys and ravines are the only arboreal representatives. Stiff, harsh shrubbery, with short branches and small, closely set leaves is the dominant type, while several kinds of coarse, hardy grasses are everywhere abundant, covering the wind-swept ridges and steeper slopes. The shrubbery is largely confined to the more level areas and the valleys, where there is more moisture, and it is less exposed to the bitter tempests of these regions. Practically all the shrubs bear large and brightly colored flowers, while small flowering annuals with blossoms of brilliant hues are very abundant. From 10,000 or 11,000 feet up to snow-line is found in varying abundance the peculiar mullein-like plant known as "frailejon," the flowers of which afford a large portion of the food for the hummingbirds of the paramo, especially the beautiful *Oxyrhopon cyanolæmus*. There seems to be but one species of "frailejon" present in the Sierra Nevada de Santa Marta, the tawny yellow variety, with golden yellow flowers, which here attains but a fraction of the

size which it reaches in the eastern and central Andes. All the finches of the paramo feed on the seeds of this plant, but the abundant seeds of the grasses form the bulk of their food. Above the snow-line there is nothing to be seen on the ridges and slopes except masses of broken rock.

HISTORICAL REVIEW OF SANTA MARTA ORNITHOLOGY.

Early Collections.—Apparently this region did not begin to figure in ornithological literature until as late as 1847, when Lafresnaye described two new species, *Cardinalis granadensis* and *Dendroplex picirostris*, from specimens brought back by the French traveller A. Delattre, and supposed to have come from Rio Hacha. But it is an open question whether Delattre himself actually collected these specimens or others credited to him at Rio Hacha, since there is no direct evidence (known to the writer) going to show that he ever visited this point at all. The type-specimen of *Trochilus floriceps*, described by Gould a few years later (1853), appears to have been brought to Europe as a curiosity by an orchid-collector who had entered the Sierra Nevada. At just about this time, however, so-called Santa Marta specimens began coming into the natural history establishment of the brothers Jules and Edouard Verreaux, through whom they soon reached the working ornithologists of that day. It does not certainly appear who collected these specimens, many of which, bearing the characteristic Verreaux labels, still exist in the various museums of Europe and America. It may possibly have been one Fontainier, whose name occurs in connection with several of the early published Santa Marta records, and for whom Bonaparte named a supposed new species of *Accipiter*. At any rate, specimens from this source have been the chief basis of numerous references scattered through the papers of Bonaparte, Sclater, and various other authors, down even to more recent years. A number of new forms were described, based on this material, while there are also a few records attributed to other parties, such as Bonnecourt and Bouchard. A collation of the available records shows that down to the year 1871 no less than seventy-five species had been recorded from the region in question. With but one or two exceptions these were all Tropical Zone forms, most of which, it is true, have subsequently been found more or less commonly

in these parts by recent collectors. The exceptions to this rule are so conspicuous, however, as to suggest that nearly all these early records ought to be received with reservations. The brothers Verreaux were notoriously careless in the labelling of such specimens as passed through their hands, and must often have got their birds mixed. There can be no question whatever, for instance, in the light of our present knowledge, that the types of such forms as *Momotus semirufus*, *Euphonia fulvicrissa*, and *Phænicothraupis erythromelæna* could not have come from Santa Marta at all, since they are obviously confined to a different faunal region in each case. Several other species, as will be shown in detail in the systematic part of this paper, are similarly involved. In one case an African species was even attributed to Santa Marta on the strength of one of these mis-labelled Verreaux specimens! In short, the "Santa Marta" of these earlier references was, in many cases at least, of as uncertain and indefinite application as the "Bogotá" of that day.

Records of Joad and Wyatt.—"In 1870 Mr. G. Joad, F. Z. S., rode round the Sierra Nevada from Santa Marta, and collected a few birdskins. Amongst these was the type of the new *Furnarius*, described by us in the 'Nomenclator' as *F. agnatus*, which was obtained at Valle Dupar" (Salvin and Godman). This gentleman is also credited with having secured a few other birds, among them the type-specimen of *Ortalida ruficrissa*, described by Sclater and Salvin in 1871, and which came from the same place. About this time appeared an extended paper in the *Ibis* by Claude W. Wyatt, giving the results of his explorations in the Eastern Andes of Colombia. Wyatt landed at Santa Marta in December, 1869, *en route* for the interior, and spent a few hours in the immediate vicinity of the city, going to Cienaga the next day. Fifteen species were recorded during his brief stay. These records by Joad and Wyatt are practically the first from this region upon which full dependence can be placed.

The Simons Expedition.—As we have already seen, with but one or two exceptions all the species of birds thus far attributed to this region came from the lowlands; nothing was known of the avifauna of the Sierra Nevada proper. Wyatt, indeed, had called attention to the possibilities from an ornithological standpoint, and Salvin and Godman, perhaps influenced by his remarks, or by independent considerations, reached the same conclusion: "Here, then, was a promis-

ing field for an ornithologist—this isolated mass of mountains, whose snowy peaks, visible from far out on the Caribbean Sea, form so striking a feature in the scenery of the northern coast of South America.” Their exploration was intrusted to Frederick A. A. Simons, a young man with the training of a civil engineer, and who had had some previous experience in tropical Africa. He landed at Rio Hacha in January, 1878, and at once proceeded overland to Valle de Upar, which he made his headquarters for some time, using it as a base for his excursions in various directions. During February and March his operations extended to Ataquez and San José, on the southern slope of the mountain, and west to the Valley of Chinchicua and San Sebastian. For the month of May he was located at Manaure, a coffee plantation in the foothills of the Eastern Andes. His first attempt to ascend the Sierra, by way of San Sebastian, appears to have been made in June of that year, on which occasion he reached the foot of the large field of snow which covers the highest point, above the sources of the Rio Aracataca. A second attempt made in July by way of the Rio Guatapuri took him across the pass over the Paramo de Chiriqua and down the northern slopes to the Caribbean Sea. He seems to have been at Chirua in August, and at San Antonio and Guallabal in August and September, but very few birds were collected on this trip. In December, 1878, and up until April of the following year, he collected at Santa Marta and its vicinity, going as far south as Arihueca, and later in the season retraced his route of the previous year over the high Sierra Nevada, doing considerably more bird collecting on this occasion, up to an altitude of 14,000 feet.

It is not possible at present to trace Simons' movements in detail after the end of July, 1879, inasmuch as Salvin and Godman's report on his collections, from which the above summary has been mainly worked out, does not carry the subject beyond that date. We know, however, that he continued work for some time thereafter, both from his own account and from the circumstance that in various later volumes of the *Catalogue of the Birds in the British Museum* we find listed additional species and specimens which are attributed to him. He returned to England in 1881, after three and a half years' residence in the Santa Marta region, but it does not appear that all of this time was devoted to natural history work. In later years he seems to have entered the service of the Colombian Government to do surveying and mapping. His death occurred in 1917.

Before entering upon any appreciation of Simons' work as an ornithologist we propose to insert at this point a quotation from his descriptive paper "On the Sierra Nevada of Santa Marta and its Watershed," because of its interest in this connection. After speaking here of the snow conditions in the Sierra Nevada, apparent and actual, he goes on to say: "The most picturesque view of the Nevada is certainly from the sea; I shall never forget the first glimpse I caught of it, while crossing from Curacao to Rio Hacha in a Dutch schooner. A glorious tropical sunset had tinged the fantastical line of snowy needles a delicate rose colour, while, lower down, the many interesting ramifications stood out distinctly in a fine glow of purple on a dark blue base. From the many points in the interior where the higher portion is visible, the view of the Nevada is decidedly what the Americans would call 'mean,' and I was rather surprised at finding a general belief among the country people that the sprinkling of snow was in reality chalk.

"After several vain attempts I was enabled last year definitely to determine the exact height of the Sierra Nevada. Provided with a complete set of Wollaston's boiling-water apparatus and aneroids, kindly supplied me by this Society, besides my own instruments, I set out from San Sebastian, accompanied by three Indians and their families, on the 1st of August. The four of us were mounted on Indian horses, the women and children following on foot, and driving bullocks laden with a fortnight's provisions, as little can be had in the high regions. These horses are wonderful climbers and as sure footed as mules, going up and down the worst places without the least trouble; wearing no bit, they feed as they go along, and often, if the start is to be early the next morning, are kept tied up without food all night; they never taste Indian corn nor any other grain. The Indians dislike donkeys, and will have nothing to do with mules, although they breed them sometimes. The Arhuaco Indian is not a good horseman; on a journey he always wears some ten to twelve gaily coloured bags full of dainties, which make mounting a difficult task, for the saddle of course gets its share of bags, too, and the help of a large stone is necessary to assist him up. We travelled very slowly, stopping at every convenient shelf or resting place in the ascent to readjust saddles, and overhaul the contents of these mysterious bags, as the Indians, when they can, indulge in a dozen or so meals in a day.

"Towards sunset, after having scaled two passes, 10,000 and 12,000 feet respectively in height, we were not sorry to reach the lovely green pastures of Adureimeina, where the Government have had a hut built, open to all travellers, a most commendable and useful institution, and there is not a path in the whole territory of the Nevada that has not these huts at half-day stages. Should they be burnt down or otherwise destroyed, every Indian must contribute his mite for their immediate reconstruction. Starting early the next morning, we managed, after much fatigue, partly on foot and partly on horse, to reach the third pass, 14,000 feet high, before the afternoon clouds obscured the view. It had threatened rain all the morning, so I was agreeably surprised to find the clouds breaking, and the whole snowy range of peaks standing boldly out on a deep blue sky. The scenery of the Sierra Nevada is excessively grand, but it is too desolate, too barren, to be really beautiful; even the loveliest flowers at this time of year so abundant, appear small and insignificant, and are entirely lost amid the general desolation. Late in the afternoon we arrived at headquarters, an Indian cattle corral on the Rio Cataca, the highest habitation in the Nevada. The mean boiling-point here was 194.4° , giving a height of 9,500 feet; this is considerably below the aneroid observations of my previous visits, which were often as high as 11,000 feet above sea-level. The Indians feed large herds of cattle and sheep on the rich pastures of the Nevada, but do not attend to them, so they run completely wild, and are for commercial purposes totally lost. Pigs, not the indigenous wild pig, but domestic animals brought up by the Indians and then abandoned, are plentiful, and, together with a red buck, which is also pretty common, afford capital sport. The only drawback is the trouble of getting up plantains, maize, and other bread-stuffs from San Sebastian, the time we were able to remain being regulated by their supply, for nothing will induce the Indian to stay after the last plantain is consumed. After spending a few days in reconnoitring the surrounding heights, we started on the 6th, and made our way up one of the numerous valleys, which all run north and south, at right angles to the central or snowy range; these again are cut by the river Cataca and two of its affluents which follow parallel to the snowy peaks.

"Five hours of rather dangerous riding, along mountain ridges and the banks of deep blue lakes, brought us into a sort of cul-de-sac,

where all further progress on horseback was stopped by perpendicular masses of rock. An observation here showed the boiling-point of water 188.1° , or 13,000 feet. Singling out a promising looking crevice in the rock, we managed, after sundry gymnastic performances, which reminded me very much of wriggling up a somewhat narrow chimney, to reach the foot of a large field of frozen snow, the long-sought-for goal of my journeys. Indians have a most determined objection to walk in snow, they complain (and with very good reason too) that it burns their feet, so I left them to await my return and pushed on alone, another terrible four hours of hard work. What hitherto appeared as terraces and fields of hard smooth snow most inviting to the eye, now became a tumbled up, heterogeneous mass of frozen snow and ice, with frightful precipices, bridges, caverns full of brilliant icicles, and all the other splendours and charms that make glacier travelling so enticing and so dangerous. Each step had to be cut in the soft yielding snow, and well stamped down to secure a footing. Thus after many futile attempts I reached a small sheltered spot right in under a projecting rock, the foot of the highest peak. Here all further progress was barred by the nature of the rock, and I discovered, to my great mortification, as far as the dense white clouds would permit, that although near to the summit the last bit of rising ground was inaccessible. The view, obscured by mists at this time of the year, must at all other seasons be truly magnificent; but, nearly blinded by the snow reflection and enveloped in a dense white fog, I could scarcely see a couple of feet ahead, and with the bitter cold, besides being wet through with snow-digging and frequent involuntary tumbles, managed with difficulty to take an observation. The temperature of boiling water proved to be 181.2° Fahr.; we were, therefore, nearly 17,000 feet above the sea. I was now far above the general chain of snow-fields and minor peaks, and allowing at the most 500 feet for the rock and patch of snow that still separated me from the summit, would give a maximum height of 17,500 feet for the Sierra Nevada of Santa Marta."

Not only was Simons the pioneer explorer and ornithologist in this particular field, but also it is to him that we are mainly indebted for such knowledge as we have of the fauna of the southern slopes of the mountains, later workers (with one exception) having confined their investigations to the northern slopes. His collection as listed by

Salvin and Godman numbers one hundred and sixty-four species, of which seven were described as new at the time, and one other later on. The only clue we have to the results of his later work (*i.e.*, subsequent to July, 1879) comes from the *Catalogue of the Birds in the British Museum* (beginning with Volume X), where we find no less than seventeen additional species (mostly alticoline forms) credited to him, including one described as new not long before. Assuredly during this time he must have also sent specimens belonging to other groups which had already been treated by the authors of the "Catalogue," and for which there is consequently no published record. Simons seems to have been content with a very few specimens of a kind, and he seems to have overlooked many of the inconspicuous forms, his collection being weak in such groups as the Formicariidae, Dendrocolaptidae, etc., for example, many of which are now known to be common in the region. He was evidently very accurate in his labelling, however, and (in most cases) in assigning altitudes to his specimens, as subsequent work has indicated. Of the one hundred and eighty-one species which he is known to have taken there are only four which still rest solely on the authority of his collection, and two of these, *Ramphastos ambiguus abbreviatus* (given as *R. tocard* by Salvin and Godman) and *Sittasomus sylvioides levis* (?) ("*olivaceus*") came from Manaure, a locality in the foothills of the Eastern Andes, and therefore, strictly speaking, not included within the faunal limits of the present region. The third species is the hummingbird *Campylopterus phainopeplus*, which for some reason no subsequent collector has succeeded in detecting, and the fourth is the Plush-capped Finch, *Catamblyrhynchus diadema diadema*, also in the same category.

The Brown Expedition.—During the twenty years which passed after Simons began his work only one new form, *Setophaga flavivertex*, had been described from the Santa Marta region from material coming from other sources. Impressed by the conviction that the ornithological treasures of the region were still very far from exhausted, Messrs. Edward A. and Outram Bangs, the well-known ornithologists of Boston, Massachusetts, determined to send a new expedition into this promising field, and chose Mr. Wilmot W. Brown, Jr., to conduct it. He was already well known for his experience in tropical collecting and the excellence of his work. Mr. Brown's own account of this trip, as contained in a letter of recent date, is of such general interest,

and throws so much light upon the conditions under which his work was done, that we propose to quote it here with but little alteration and excision, reserving comment until later.

"On my arrival in Santa Marta in December, 1879, I went to Bonda, a small village in the foothills about eight or nine miles to the eastward of the city, where I spent between two and three months collecting. From this point we worked up the mountain slopes [of La Horqueta] to about 6,000 feet. At Bonda I met with a severe accident, burning my hands quite badly, so that I was obliged to depend on a native collector to help me—that is, shoot specimens; I did not allow my sore hands to keep me from skinning. In addition to my burns, I was suffering from about a hundred insect-bites, which festered in that hot climate; some of the sores were about the size of a quarter and I bear the scars on my body to this day. Bonda, as I remember it, is in a valley, well wooded and with a fine stream [the Rio Manzanares] flowing through it. Along this stream is where I did the most of my collecting. My native collector was reliable and obtained many fine specimens for me while my burns and sores were healing up. Bird-life was plentiful and I succeeded in making a fine collection. Upon completing my work here I returned to Santa Marta and shipped my collection of birds and mammals from there.

"After a few days at Santa Marta, where I collected some specimens within a short distance of the town, I embarked on a small schooner bound for Rio Hacha, which we finally reached after being at sea about ten days. Rio Hacha is an Indian trading town or port over near the Venezuela frontier, and has a population of about eight thousand. The country around Rio Hacha is low, flat, and dry, and covered mostly with bush. I did no collecting here, but outfitted and provisioned for my coming trip to the Sierra Nevada mountains, into a different region from that where I had already worked. Finally, when my plans were completed, I embarked in a big "dugout" canoe, and after four days' working along the coast reached Dibulla, a small village convenient to the mountains. I did not do any collecting at Dibulla, but it looked like a good collecting ground for lowland birds. The country around Dibulla is low, flat, and mostly covered with brush, but with woods along the river. There is a population of about five hundred, who live by farming and fishing. I spent several days here and managed finally to obtain pack-animals for my trip into the

mountains to the Indian village of Pueblo Viejo. The trail from Dibulla extends along a wide sandy beach for about ten miles, now and then passing through shady groves of beach-plum, and then enters open woods, where the branches of many of the trees are fringed with small ferns, with orchids, and Spanish moss. Here jacamars, motmots, and hummingbirds were observed, and howling monkeys were heard in the distance. After fording a river we emerged upon a grassy savanna, in some places marshy and in others grown up to palms; there was a stretch of about three miles through this kind of country, which is a favorite place for the jaguar. The trail then enters the typical tropical forest, dark and cool. We pass under beautiful tree-ferns, some of them fifteen feet high, with wonderful crowns of wide-spreading fronds; and under alligator-pear and mahogany trees, the pack-animals halting now and then to pick up the fruit of the former, of which they are very fond. They know enough to spit out the large black stones instead of swallowing them. On account of the dangerous mountain trails, with red clay in steep places and along the precipices, the Indians use oxen for pack-animals, since being cloven-hoofed they do not slip so readily. In many places in this forest the trail was barred by immense trees, blown down by a recent storm, the branches of which were adorned with beautiful orchids of many colors, pinks and yellows predominating, some of them doubtless rare species. It was while cutting a trail with our machetes around one of these trees (which sometimes required two or three hours) that I first saw the beautiful white-tailed hummingbird which Mr. Bangs described as a new species [*Leucuria phalerata*].⁶ A peculiar thing about this dark, gloomy tropical forest is that one does not see or hear many birds while travelling through with a pack-train. To find birds in such a forest requires patience and plenty of time. In this forest live immense boa-constrictors, which seek their prey on the tops of the high wooded ridges.

"On the fourth day after leaving Dibulla we reached Pueblo Viejo, in the heart of the Sierra Nevada mountains, and were pleas-

⁶ Almost certainly this was an error in identification. I have never seen this species below 4,000 feet in the Sierra Nevada proper, and 5,000 feet is its extreme lower limit on the San Lorenzo. What Mr. Brown saw in this case was most likely *Florisuga mellivora*, which is fairly common in the region which he was traversing.—M. A. C., Jr.

antly received by the natives. This was about the middle of May. Pueblo Viejo is situated in a deep valley surrounded by mountains. On the east side of the village the mountain slopes are clothed with a coarse grass, on which the cattle of the Indians graze. On this grassy slope, high up, I collected swifts when the fog or clouds hung low; this was the only time I could get near them. On the west side of the village is a fine, swift mountain stream, full of rocks, and beyond this a high, symmetrical, cone-shaped mountain towers up, covered with a dangerous saw-grass, which cuts like a knife and is most difficult to traverse except by the aid of a machete. A peculiar thing about this mountain is that water flows from its summit and can be seen glistening in the afternoon sun. No one has ever climbed it. On the northwest rises a very high mountain, which is densely forested to its summit. To the south of the village the country is lower, but well wooded, and in places swampy.

"The inhabitants of Pueblo Viejo are engaged in cattle-raising, farming, and trading with the Indians. They raise coffee, sugar-cane, and bananas. About a mile up the valley from Pueblo Viejo is San Antonio, the conditions being practically the same at both places, and the inhabitants similarly engaged. The strip of woods along the river between the two places is a famous resort for the deadly poisonous snake *Craspedocephalus lanceolatus*, known commonly as the fer-de-lance. I collected some fine specimens of this and other species of snakes. The Indians lose many cattle from snake-bites every year, not to mention human lives. Most of my work on this trip was done about Pueblo Viejo and the other villages higher up, and birds and mammals being plentiful there, I brought out a fine collection, including a number of new forms."

We interrupt Mr. Brown's narrative at this point to insert, as an interesting sidelight, some additional information which we quote from an article by Mr. Bangs (*Auk*, XVI, 1899, 136):

"Travelling in the Sierra Nevada is at best slow and laborious and in the rainy season is harder still. Mr. Brown, in order to go as light as possible, carried no tent with him, and cut down his outfit in other ways till much too small for his comfort. Night after night he slept out with no shelter, wet to the skin by the terrific thunder storms that rage in these mountains nearly continuously throughout the spring. His one pair of shoes was soon worn out by the rough

travelling, and for the greater part of the trip he went barefoot, his feet and legs exposed to the attacks of wood ticks and numerous insects, with every now and then a narrow escape from a fer-de-lance or a bushmaster.

"Many of the trails are fairly good, being used by the Indians, but occasionally Mr. Brown had to cut his way through the forest, and the mountain streams, swollen by the continuous rains to raging torrents, were often very hard to ford. Under these conditions Mr. Brown made a very creditable collection, sending in over a thousand bird skins and about three hundred and fifty mammals as the results of his six and a half months' work."

Mr. Brown's trip was broken up in the summer of 1898 by his having to return on account of illness in his family, but he came back again in January of the following year, and on this occasion succeeded in reaching a much higher elevation than on his first trip. He goes on to say:

"About a day's trip above San Antonio is the interesting Indian village of San Miguel, situated on a grassy plateau about 5,000 feet above sea-level. This village of little round houses with roofs of thatched grass and walls of woven branches is an interesting and unique sight to the traveller. At the time I was there the Indian population numbered about two hundred persons. One of their occupations was making large rope bags, with wide meshes, for transporting goods on the backs of pack-animals. They also made smaller bags of pleasing design, used by the women to carry their children; the bag when in use being carried on the back, with its strap brought over the forehead. The Indians have little farms and raise onions and other vegetables. They are quite pacific by nature, but are expert at making poisons. They are said to eat snakes and frogs, and although I never saw them do so, I took no chances, doing my own cooking. They are fond of chewing a leaf said to be from the cocaine shrub or bush, but always take with it a white powder made of pulverized sea-shells.

"About half a day's travel up the mountain beyond San Miguel is the Indian village of Macotama, which at the time of my visit had only a few families living there. They let me have a large round council house in which to live and prepare my specimens, and it was the coldest, darkest, most villainous place in which to work that I have

ever had. One day when I was out hunting my Indian put a tray of my skins out in the grass in front of the wigwam to dry in the sun, and when he was not looking an Indian dog devoured every bird in the tray, leaving hardly a feather! My feelings upon my return may be imagined, if not expressed. Macotama is situated on a grassy plateau at about 8,000 feet⁷ above sea-level; near by in a canyon I found birds quite plentiful. At the time of my visit the trail passed over a shelf on the side of a cliff where the ground seemed to be held in place by roots; in places there were holes through which I could see the scenery about eight hundred feet below.

"Above Macotama, at about 15,000 feet altitude, the region is called by the Indian traders the Paramo de Macotama, and the Paramo de Chiruqua is in the same zone, but farther over [*i.e.*, to the west]. It was cold, rainy, and exceedingly uncomfortable and disagreeable when I was up there, and we were in the clouds most of the time. In crossing the Paramo de Macotama the Indians are sometimes caught in ice-water storms and perish miserably. On one occasion we were caught in a storm and got chilled to the bone; we had to run for our lives to find shelter in a cave. During*the period of my explorations in this region several Indians lost their lives in attempting to cross the paramos on the other side of the mountain.

"Upon the completion of my work in this district, in April, 1899, I returned to Rio Hacha and shipped my collections to the Messrs. Bangs. I then outfitted and provisioned for my coming trip to the region on the southern side of the mountains. Leaving Rio Hacha with a pack-train of eight mules and two drivers we finally reached our objective, San Sebastian, after being two weeks on the way. The trail from Rio Hacha to Valle de Upar traverses a long valley, mostly flat country, but with occasional low hills, lying between the Sierra Nevada mountains on the one hand and the Sierra Negra on the other. The season being advanced and the birds beginning to moult, I did no collecting on the way, conserving my strength and time for the San Sebastian region. On leaving Valle de Upar for San Sebastian the trail for several miles passes through low, well wooded country, with here and there a small farm or cattle-ranch; then it comes to a very steep slope and goes up and up through the forest until within a short distance of Pueblo Viejo; from here on the trail is over grassy

⁷ Compare data given under this head in the List of Localities, page 117.

slopes until it reaches San Sebastian. The village is situated on a level plateau or plain with mountains on either side. . . .^s It has a mixed population of about three hundred people, Indians and Colombians. The Indians appear to be more civilized than those living on the other side of the mountains, at San Miguel, etc. They raise vegetables, which they send to Valle de Upar on pack-animals, to be sold in the market. Most of the Colombians are traders, but some are there for their health. The climate while I was there was agreeable, although there were days when it was cold. The building in which I lived and prepared my specimens was known as the 'old church,' which I occupied alone. There was no way to heat the place, and it was roomy, sepulchral, and musty, and full of rats, so that I had to lock up my skins in the collecting chests every night.

"In addition to my work at San Sebastian, I had a native collect some specimens for me at Templado and El Mamon, in the mountains. He found birds not only scarce, but also very shy. He reported the country in that neighborhood to be covered with grass, but with low woods along the mountain streams. Had my trip been earlier in the season, I would have endeavored to work the high snow-covered mountains above Templado, but with the birds in poor plumage and moulting, I decided not to undertake it. Well, about the middle of August, my work here being completed, I packed my collections, and engaging an outfit of pack-mules, bid my friends farewell, and started on the long return journey to the coast, reaching Rio Hacha two weeks later, where I shipped my collections to the United States, following myself some weeks later, after making an exciting journey through the Goajira Peninsula, on which, however, birds were not the object."

Mr. Brown surely deserves great credit for his work in the Sierra Nevada, as it was done at the time when that region was little known and not easy of access, being inhabited almost solely by Indians, who were, however, and still are, very honest and peaceably inclined. The total number of specimens of birds collected by Mr. Brown on his entire trip was between twenty-six and twenty-seven hundred, all of unusually high grade. Through the generosity of Mr. Bangs many of these skins found their way into the collections of other individuals and institutions, the U. S. National Museum receiving a goodly share. Unfortunately not all the specimens were cataloged before this was

^s For matter here elided see under List of Localities, page 126.

done, nor were all the species or specimens taken in 1899 duly listed in the published report on the collection. As a result numerous locality records for various species escaped publication. An effort has been made to collect these for insertion in the present paper, as elsewhere remarked, for their value from a faunal standpoint. The great criticism we have to make of Mr. Brown's work in this region is that he was not sufficiently careful as to *localities*. In the first place, he seems to have depended entirely too much upon native hunters, so that he could seldom have had more than a vague idea as to the exact place or altitude from which certain birds came.⁹ Again, there are

⁹ At this point I wish to state that, while I am criticizing the use of the native hunter by collectors, I want it understood that it is not this use in itself to which I object, but the manner in which it is done. I employ a native hunter myself, and much of my success in the Sierra Nevada was due to the use of a more than ordinarily intelligent Colombian, a man whom I had been training constantly for over three years. What I do find fault with is the practice of so many collectors (and I speak from personal knowledge and observation) of sending out native hunters with orders to shoot everything in sight, while they remain in camp preparing specimens, with the result that often twice as many birds are shot as are prepared, while the really desirable kinds are usually overlooked, on account of the hunter's laziness and lack of intelligence. What I have always done is to keep nearly constantly in the field myself, covering alternately the same ground as my hunter, so that I can understand from his explanation exactly where and under what conditions every bird was taken by him in each day's shooting, and also to see if he is doing his work properly. It often happens that he gets kinds which I have not seen, and *vice versa*, so that the work of one is a check on that of the other. There are many species of birds the habits and habitat of which render them extremely difficult to secure, and if the native hunter is inclined to be lazy (as most of them are) he will fail entirely to find such species, which for this very reason are the greatest desiderata. It takes more than an ordinary amount of patience and grit to stand motionless in a swarm of vicious mosquitoes and call up a terrestrial ant-thrush out of the impenetrable jungle, and they are rarely secured in any other manner. Thus the only way for the collector to do thorough work is for him to learn by actual field experience the habitat, habits, and call-notes of as many species as possible, so that he will know more or less just what to look for in any given locality and know when he is getting everything there is to be had, for every kind of environment has its characteristic forms of bird-life. As a rule closely related species have similar characteristics, frequenting the same kind of cover, and having call-notes more or less alike, so that what is learned about one species in one locality can be utilized in searching for allied species in other localities. I am

serious inaccuracies in the altitudes he assigns for his collecting stations in the Sierra Nevada, and in the localities as they appear on his labels. For instance, all his skins taken at Bonda bear the label "Santa Marta," which would be very misleading to anyone not knowing the exact circumstances. As a matter of fact, none of his skins thus labelled can be used in determining the local distribution of species, since they were admittedly collected anywhere from near sea-level up to 6,000 feet on the slopes of the Horqueta, and therefore in two distinct life-zones. Similar inaccuracies are evident in other cases. Pueblo Viejo, where his first work in the Sierra Nevada was done, he gives as having an altitude of 8,000 feet, while as a matter of fact it is only about 2,000 feet above the sea, and we are left to conjecture whether or not his specimens may not (some of them) have come from higher up on the surrounding mountain slopes. The same question arises with reference to other of his localities in this region, and is later discussed more in detail. In fact, in the case of a number of alticoline forms the ranges he gives differ radically from those worked out by the junior author, and too much dependence naturally cannot be placed on such records.

In the course of his work Mr. Brown took (as nearly as can be determined) two hundred and forty-five species and subspecies, of which no less than sixty were eventually described as new by Mr. Bangs, as material for comparison became available from time to time. Many of these were new names for forms already recorded from the region by Salvin and Godman, but others were peculiar, characteristic, heretofore unknown birds. Mr. Brown's collection, indeed, contained as many as one hundred and fourteen forms not taken by Simons, but out of this number there still remain only five resting solely on the authority of his specimens, namely, *Neocrex colombianus*, *Aramides axillaris*, *Serpophaga cinerea cana*, *Mimus gilvus melanopterus*, and *Vermivora pinus*. Of the sixty new forms described from Mr. Brown's material thirteen appear to have been based on insufficient

speaking thus plainly not from personal motives, but with the hope that other collectors may be led to do more thorough work in the difficult field of the American tropics, where so many trying situations and adverse conditions confront the collector and make it so hard to secure a full representation of the avifauna and to accumulate thoroughly reliable data on their life-history and distribution.—M. A. C., Jr.

characters, or else to have received earlier names, so as to compel their relegation to synonymy.

The Smith Expedition.—Wholly unaware that any other parties had designs on the same field, the late Mr. Herbert H. Smith, so well known for his previous zoölogical work in various parts of the American tropics, had been for some time, so Dr. Allen tells us, "preparing to thoroughly explore the Santa Marta district of Colombia, both zoölogically and botanically, beginning at sea-level and later working up to the highest points of the Sierra, it being his intention to devote from three to five years to the work, aided by a number of assistants. . . . While to Mr. Smith is due the credit of organizing and equipping the expedition and directing its work, he has personally done very little of the actual work of bird collecting, which has been carried on by Mrs. Smith." She was assisted by her niece, Miss Grace H. Hull, and by Mr. A. E. Edmondson, the latter doing most of the work on large birds, and on the nests and eggs. The expedition was undertaken under the auspices of the American Museum of Natural History, to which the bulk of the collections was to come, but the Carnegie Museum was interested to the extent of a small representation of each species. Mr. Smith's party landed at Santa Marta in March, 1898, but for several months thereafter he was himself laid up with a nearly fatal illness, superinduced by the bites of poisonous insects. Cacagualito was his first collecting station, but he soon located at Bonda (already described as the headquarters of Mr. Brown while working in this region a few months earlier), from which as a base excursions were made to various other points in the same general region. Later on he did some work at Valparaiso (now known as Cincinnati), and on the western slopes of the San Lorenzo and La Horqueta, up to 7,000 or perhaps even 8,000 feet. Although several places on the seacoast were apparently visited at intervals in 1898 and 1899, very little bird collecting seems to have been done at any of them with the exception of Cienaga, where a week's work yielded a variety of shore-birds and a few other kinds. In 1900 Mr. Smith's activities were "almost wholly suspended in consequence of the disturbed condition of the region, due to a violent insurrection in the immediate neighborhood," but in 1901 he made a trip to Don Diego, on the north coast, securing a considerable collection of both birds and mammals. He was obliged to return in September of that year without having fully accomplished the objects of his expedition.

The region covered by Mr. Smith's party was therefore roughly triangular in outline, bounded on the west and north by the Caribbean Sea, and on the southeast by the San Lorenzo de Santa Marta. As most of his bird work was done at lower altitudes, and he secured few if any birds above 7,500 feet, it is not surprising that the number of Subtropical Zone forms in his collection is so much smaller in proportion than in the lists of Simons and Brown, while Temperate Zone forms are entirely absent. Mr. Smith also depended to some extent on native hunters for his specimens, and as they often made long excursions in search of the same, he could not always be sure of the altitude at which a given specimen was taken; nevertheless, the junior author has found his labelling reliable by comparison, save in the case of such specimens as are found marked "Bonda." About forty-one hundred birds in all were returned by Mr. Smith, of which nine hundred and ten came to the Carnegie Museum, together with a set (one of each species) of nests and eggs; the balance were acquired by the American Museum of Natural History, whence a considerable number have found their way into other collections by exchange. It so happened that Mr. Brown's collections began to reach Boston and be reported upon long before Mr. Smith's were received at New York; in fact Dr. Allen's paper on the latter did not appear until August, 1900, and his supplementary report not until October, 1905. After making the necessary corrections in these two papers, and listing the additional species represented in the Carnegie Museum by specimens received from this source, we find that Mr. Smith sent in no less than three hundred and fifty-four species from this region, of which as many as one hundred and thirty-two had not been previously recorded by Messrs. Simons or Brown. In view of the fact that he did so little work outside the Tropical Zone, and that his general area of operations was restricted, this was doing very well. A special collection of birds of prey made by him for the Carnegie Museum is unusually fine and complete, including several rare species. A careful count shows that there are no less than thirty-two species which are attributed to the Santa Marta region solely on the strength of specimens received from Mr. Smith. A considerable number belonging to this category are here recorded in print for the first time.

In connection with his report on the Smith collection proper Dr. Allen undertook to collate the records of Messrs. Simons and Brown.

and thus to give a complete, up-to-date list of the birds of the Santa Marta region. He was greatly handicapped in preparing this paper by the lack of proper material for comparison, entailing unavoidable errors. The paper, moreover, bears internal evidence of undue haste in composition and publication in the form of a number of unfortunate lapses in the scientific names, etc. Three hundred and eighty-eight species are admitted to the list, and the number might have been considerably augmented had the early published records by Sclater and others, as well as all the later ones by Simons, been included. Nine forms were described as new. Nevertheless this paper, standing as it does for the first serious attempt to treat the birds of this interesting region from the faunal standpoint, is most valuable and instructive. An analysis shows that twelve species are entered under two different names, as will be indicated in detail beyond, but two of these errors were later corrected by the author. Two species were entirely overlooked, and several others misidentified. The record for *Sporophila plumbea colombiana*, quoted from Salvin and Godman, we regard as indeterminable. In a supplementary paper five species were added to the first list. With these corrections made, three hundred and eighty-three becomes the actual total number of species on the Santa Marta list, as the subject was left by Dr. Allen in 1905.

Mr. Smith's collection of nests and eggs, or rather that part of it which went to the American Museum of Natural History, was listed and described by Dr. Allen in his supplementary report. Of these he writes: "The labels rarely give anything beyond the date and place of collecting; there is unfortunately nothing to indicate the height above the ground at which the nest was placed, or the kind of tree or shrub in which it was found. The few notes found on the labels have been transcribed and are given in their proper connection, between marks of quotation." The really unfortunate part about this collection, however, would appear to be the unsatisfactory identification. The skins sent as "markers" for the determination of the nests and eggs are in no case the parent birds, but merely specimens supposed by the collector to belong to the same species. The risk of error was thus considerable, as is obvious in the case of *Pitangus derbianus rufipennis*, the nest and eggs of which were wrongly attributed to *Megarynchus pitangua*, as pointed out by Mr. George K. Cherrie. An examination of the set of nests and eggs sent to the Carnegie Museum discloses numerous

discrepancies, affecting in some cases the same species as are referred to by Dr. Allen, and suggests that the identifications must be received with caution, and discarded entirely where they fail to agree with facts already known. Nevertheless, with this understanding, we consider that these descriptions are of sufficient value as a contribution to the life-history of the species in question to quote them at greater or less length, and we have added some new ones taken from material in the Carnegie Museum.

The University of Michigan Expedition.—This expedition, as we learn from the Director's "Annual Report" for 1913-14, "had for its object the exploration of the western end of the Sierra Nevada de Santa Marta and the adjacent lowlands, in Colombia. The party consisted of the Director [Prof. Alexander G. Ruthven], F. M. Gaige, Scientific Assistant in Charge of Entomology, and Dr. A. S. Pearse of the University of Wisconsin, Honorary Curator of Crustacea. The expedition arrived at Santa Marta on July 1 [1913], and at once proceeded to the plantation of the Cincinnati Coffee Company, at an elevation of 4,500 feet on the Mountain of San Lorenzo. From this base a strip was carefully explored between 2,200 feet and the summit at 8,300 feet, 26 days being devoted to the work. On July 27 the party moved to the foot of the range and continued the explored strip from 2,200 feet to the plain, and on August 6 went to Fundación on the extreme western end of the range. Investigations were carried on at this place for fourteen days, and then about Santa Marta, Gaira, and on the Salamanca Coast near Cienaga until September 1, when the party left the field."

Birds were merely a secondary object of this expedition, which gave more attention to other groups, and to ecological studies. Nevertheless one hundred and forty-nine specimens were secured, mostly by Mr. Gaige. These were all deposited in the U. S. National Museum, where they now are. New locality records based on this collection are duly listed in the present paper.

The Ujhelyi Collections.—Specimens collected by Mr. J. Ujhelyi, bearing such locality labels as Aracataca and "Tagua" (Las Taguas), have found their way to the National Hungarian Museum at Budapest, and a few new forms have been described from this material by Dr. von Madarasz. This material comprised about one hundred and fifty skins (more or less), and was collected late in 1911 and early in 1912.

ORNITHOLOGICAL EXPLORATIONS OF THE JUNIOR AUTHOR.

The junior author began operations in the Santa Marta region in 1911, arriving at the city of Santa Marta late in May. His first work was done at the hacienda Cincinnati (formerly known as Valparaiso) on June 1. This is the largest coffee-plantation in the whole district, and lies on the western slopes of the San Lorenzo between 3,000 and 5,000 feet, with unbroken forest on all sides, extending downwards to the foothills and upwards to the crest of the mountain. More or less continuous collecting was carried on at Cincinnati and on the San Lorenzo during June and July, while in early August some work was done between Mamatoco and Cincinnati, at La Tigrera, Minca, and Agua Dulce. Work was suspended from August 7 until March 15 of the following year. On March 17 the attempt to reach the main Sierra Nevada by way of the ridge connecting it with the San Lorenzo was begun. Nearly three weeks were consumed in this attempt, which finally had to be given up, the project being next to impossible under the existing conditions. There was no trail of any sort, nothing but unbroken forest, and a trail had to be cut out with machetes. After ascending the ridge to an altitude of about 8,500 feet, further progress along its crest was checked by an impenetrable tangle of brush and huge bromelias, reaching a height of from four to ten feet. Water was very difficult to secure and birds were scarce, so that after a couple of days of heart-breaking work in an attempt to pass this barrier, the trip was reluctantly abandoned and the party returned to Cincinnati. Work was continued here for a short time and then near Mamatoco until April 26, when the writer returned to the United States for a few months' rest, having been collecting constantly in Trinidad and Venezuela from 1909 to 1911, before going to Colombia.

He returned to Santa Marta in September, 1912, accompanied by Mrs. Carriker. Some intermittent collecting was done in the vicinity of Cincinnati during the remainder of that year and the early part of 1913. However, the following April he took the field again, accompanied this time by Mrs. Carriker, who had by this time acquired some skill as a preparator, and work was continued almost uninterruptedly through 1913. The first locality visited was a point between Mamatoco and La Tigrera along the valley of Tamocal Creek, where two weeks were spent and nearly three hundred specimens collected. After

that a short time was spent working between Mamatoco and Santa Marta, with a couple of trips to Gaira.

On May 27 a trip was made to the hacienda known as Las Vegas, situated on the east slope of a ridge joining La Horqueta, at the headwaters of the Rio Mendiguaca, between the altitudes of 3,000 and 6,000 feet. Two weeks were spent here and very thorough work done, resulting in a collection of nearly three hundred specimens. Birds were not abundant, however, while the ground was broken and the forest difficult to penetrate. The terrible snake known as the "fer-de-lance" was far too common here to make it agreeable, and several very narrow escapes from being bitten by it were had, so that taking it altogether collecting was no easy matter.

After returning from Las Vegas camp was established at Minca for two weeks, and all the slopes between 1,500 and 2,500 feet were worked systematically. Two hundred and fifty specimens were taken here, but the heavy rains coming on interfered with getting the best results. From July 6 to August 3 work was done at Cincinati, San Lorenzo, and in the vicinity of Mamatoco, nearly three hundred specimens being secured and numerous forms new to the collection added, while many loose ends of distribution were caught up.

On August 6 a trip was made to Fundación, in company with Dr. Ruthven, Mr. Gaige, and Professor Pearse of the University of Michigan party. Two weeks were spent here, with splendid results. It proved to be a very rich and interesting field, and many species were secured which had not hitherto been recorded from the region in general. Four hundred specimens were collected, and birds were found not only numerous in species but also abundant in individuals, while such a diversity of ecological conditions as prevailed here was one seldom encountered.

Upon returning from Fundación some time was spent in looking for special forms in the vicinity of Mamatoco, Bonda, and Gaira, after which, on September 25, a trip was made to the Cienaga Grande, with the idea of getting as complete a knowledge as possible of its denizens. The party embarked from Pueblo Viejo (near Cienaga) in a big "bonga" or dugout canoe, with a smaller canoe in tow for shooting purposes. The first stop was made at Punto Caiman, where camp was pitched on the narrow strip of sand-beach separating the sea from the Cienaga. All fresh water had to be brought in kegs from a small

fishing village lying between our camp and Pueblo Viejo, having been brought originally from the mouth of the Aracataca River. We were fortunate in securing several large deer, which gave us plenty of fresh meat, but life was a constant torture at all hours of the day and night, due to the hordes of mosquitoes and sand-flies, which not even a solid muslin canopy would keep out. Suffice it to say that all possible haste was made to get away from such an undesirable locality, and after five days of constant torture we again embarked and fled out into the Cienaga in the evening, hoping thus to get one night of peaceful sleep. But we had not reckoned with the vampire bats. Indeed, we did sleep, and so soundly that it was not until morning that we discovered that an attack had been made on us during the night, the whole party looking as if they had been in a trench-raid in the war zone, covered with blood-stains from head to foot from the innumerable bites of the loathsome vampires. It may seem unreasonable to think that we could be bitten in such a fashion and not be awakened, but the fact is, that when the vampire bites there is absolutely no pain produced at the time, the soreness developing later.¹⁰

However, we managed to get some one hundred and fifteen specimens during our stay at Punto Caiman, several of which were additions to the list, among them the hummingbird subsequently described by Dr. Stone as *Lepidopyga lilliae*. After a hurried bath and breakfast we set sail for Trojas de Cataca, a little fishing village at the mouth of the Rio Aracataca. The houses are all built on piles over about four or five feet of water, and we secured quarters in a comparatively new one. The odor of drying fish was very disagreeable at first, but after a couple of days we did not mind it very much. It was a pretty sight to see the little fleet of fishing canoes sail away at dawn every morning in search of the great schools of "Lisa." When

¹⁰ I had ample proof of this while collecting them around Puerto Cabello, Venezuela. I caught them in an old tunnel formerly used for an aqueduct, using an insect-net for the purpose. After getting them into the net, I would carefully catch them by the nape of the neck and shove them into a cyanide bottle. They are very strong for their size, and the skin of their neck being loose, it so happened that in several cases the animal contrived to wriggle around and bite my thumb and finger before I could get it into the bottle. When thus bitten I was never aware of the fact until I saw the stream of blood coming from the wound. This wound is made by the four incisor teeth, which work like scissor blades and have the edge of a razor.—M. A. C., Jr.

luck was good they would return between three and four in the afternoon, loaded to the gunwales, and then there was pandemonium let loose in the village—singing, shouting, whistling, and laughter, while everyone big enough to handle a knife turned to the task of cleaning the fish for drying, which would usually consume half the night, the remainder of which was usually given over to dancing and drinking.

Practically all the shooting in the region of Trojas de Cataca was done from a canoe, the shores of the Cienaga at this season of the year being inundated for miles inland. Herons, terns, and ducks were abundant, while the forests were filled with screaming parrots and howling monkeys. Occasionally a manatee was seen at the mouth of the river, but it was not secured. Trips were made up and down the shores of the Cienaga and the streams flowing into it, as far south as the Rio Palenque, which enters the Cienaga nearly at its southern end, and is, really the Rio Fundación with the addition of several other streams. October 3 to 14 was spent in this section, and one hundred and fifty specimens were taken, the majority of which were large aquatic forms.

Following our return from Trojas de Cataca practically no work was done until January of the following year (1914), when the trip to the Sierra Nevada proper was undertaken. On January 10 the writer, accompanied by Mrs. Carriker and a native Colombian assistant, left Santa Marta, going overland with pack-mules to Don Diego. The trail is a trail in name only, and was found to be almost impassable, so much so that three and one-half days were consumed on the trip to this place, where we arrived at dusk, after thirteen hours in the saddle, tired, hungry, and covered with bites of black flies, sand-flies, mosquitoes, and ticks, the latter of which were still attached in myriads to our persons. A hurried rubdown with kerosene removed the ticks, after which a delightful sea-bath somewhat restored our flagging appetites, and a good supper with suitable refreshments provided by our genial host, Monsieur Barbier, completed the restoration. The whole north coast and lower slopes, up to 3,000 or 4,000 feet, contain more insect pests to the square inch than any place in Colombia known to the writer, excepting some portions of the Atrato basin; and Don Diego proved to be no exception to this rule. The attacks of the flies and mosquitoes can be prevented to a certain extent by the liberal use of "dope," but the wood-ticks could not thus be avoided and were a

serious drawback to the best field-work. We had expected to spend but two weeks here, but to our great disappointment no boat could be secured, that belonging to the farm having been recently wrecked. Therefore it became necessary to go by land to Dibulla in order to secure a big canoe for the trip. The trail from Don Diego to Dibulla follows the open sea-beach, but between Don Diego and the mouth of the Rio Palomina are a series of cliffs, against which the sea dashes in furious breakers when it is the least bit rough, so that it is only possible to pass them when the sea is absolutely calm and at low tide, and even then it cannot be done with loaded animals, since a dash must always be made to get through between rollers. We had sent our pack-animals back to Santa Marta, keeping only two saddle-mules, which we intended taking on the whole trip. Therefore the writer and his Colombian assistant set out with these two animals for Dibulla. We passed the cliffs in safety, but not without several thorough duckings, and one hard bump, when the writer was caught by a larger wave than usual, picked up bodily, mule and all, and slammed against the cliff. After two days of strenuous work in Dibulla a large sea-going canoe was finally secured, with a crew of five men, who agreed to make the trip for about double the ordinary price.

We left in the evening and arrived at Don Diego before dawn, having had a brisk wind astern all night. Then followed a half day of frenzied packing, and at 4 P. M. we were loaded and attempted to put to sea. There is here no harbor of any sort, merely an open beach, and in passing the second line of breakers we were nearly swamped, and forced to return to the shore, with much of our outfit wet and damaged by the salt water. The next afternoon we made the attempt again and succeeded in getting through with a good drenching while passing the third line of rollers. Luck now seemed to have deserted us completely. A head wind sprang up, while at the same time we were fighting against a strong current, so that morning found us only in front of the Rio Palomina. The whole of that day and the following night was spent in reaching Dibulla, where we arrived at dawn, worn out with thirty-eight hours of travel at sea in an open boat, and with nothing hot to eat or drink.

We went at once to a nearby cocoanut- and cattle-plantation, to the manager of which we had a letter of introduction, and under whose hospitable ministrations we speedily recovered from our recent un-

comfortable experience. On account of the long delay in getting away from Don Diego we were now much behind our intended schedule, two whole weeks having been lost between the last day's collecting at Don Diego and the first work at Dibulla. However, splendid results had been secured at Don Diego, where five hundred specimens were collected between January 14 and February 7.

Pack-animals proved to be unobtainable in Dibulla and it was necessary to send to Pueblo Viejo for them. The resulting delay was very profitably utilized at Dibulla, eight days' collecting yielding nearly two hundred specimens. As soon as the oxen arrived, we began to pack up and got started the next day for Pueblo Viejo, reaching the place about 2 P. M. on the second day, after passing the night in a rude hut in the forest, built for that purpose. With a good saddle-horse it is possible to make the trip from Dibulla to Pueblo Viejo in one day, but with oxen for pack-animals nearly two days are required, and in the rainy season perhaps even more. Leaving the beach, the road crosses a stretch of flat littoral of considerable width, perhaps eight or ten miles, before the foothills are reached. This littoral is interspersed with savanna and woodlands, and has many palms. These savannas are evidently due to deforestation and repeated burnings. After the foothills are reached the heavy humid forest begins, and continues unbroken to Pueblo Viejo, with only here and there a small clearing to break the monotony.

It was a delightful change to reach the cool climate of Pueblo Viejo and escape the flies and mosquitoes of the lowlands, but we still had, as we soon discovered, the omnipresent wood-tick, in even greater abundance than on the coast, the savannas around the village being alive with them, as well as the second-growth scrub where the cattle ranged. It was almost a daily occurrence, upon returning from the hunt, to have to take a bath in kerosene, and then boil one's clothes to kill the ticks. We pitched our tent on the bank of the Rio Ancha about a half-mile below the village, thus escaping too-frequent visits from the natives, as well as from their pigs and dogs. The vicinity of Pueblo Viejo presents an unusually fine field for operations, there being a great variety of ecological conditions within a few hours' tramp from the village, situated as it is just at the upper edge of the foothills, and at the base of the higher ranges. Collecting was carried on here from March 4 to 21 inclusive, nearly four hundred specimens

being taken. From here the valley and the heights of Chirua were worked, as well as the valley of the Rio Ancha above the village, and the foot-hills below it.

For the continuation of the trip to San Miguel and the higher altitudes, oxen were secured from the Indians of that village, negotiations to that end having been made with the old chief Aragonesis. It is a pleasant trip from Pueblo Viejo to San Miguel, the trail passing almost entirely through open country up the Macotama Valley, so that there is a constantly changing panorama of magnificent scenery. I had gone up alone previously and selected a camp-site on the plateau opposite the village, so that upon our arrival camp was rapidly made. However, we spent the first night in the village itself, sleeping in the "public house," reserved for travellers, and crossed over to our camp early the next morning. Everything was made as snug as possible, to be prepared for the icy wind which sweeps down the valley during the night from the eternal snows above. We arrived at San Miguel on March 23, at which time the village was practically deserted, nearly all the inhabitants being far away in the mountains preparing land for the spring planting in April and May. However, we were able to secure from the few who remained some fresh potatoes, onions, squashes, aracache, and a few eggs, also panela, or crude sugar, boiled down from cane-juice. Meat was unobtainable, and we were perforce dependent on what edible birds we could kill and on tinned meat brought from Santa Marta.

Collecting conditions at San Miguel were very difficult. We were camped in a deep valley, surrounded by grassy mountain slopes for the greater part and with virgin forest far away; so far, indeed, that it could not be reached in time to do any collecting and return the same day. We were forced to pass many nights in some temporarily vacant Indian hut or in the forest in order to get the early morning shooting, all of which meant climbing four or five thousand feet with a load of twenty-five or thirty pounds, sleeping out, collecting until noon, and then hurrying back to camp to care for the specimens secured. Thus, Mrs. Carriker was left many nights entirely alone in camp, while the writer and the native collector were off in the paramo, or far away in the forest of the Cerro de Caracas. This arrangement was made possible only because of the completely inoffensive nature of the Indians, the like of which I have never seen before or since

in any aboriginal people. Not only are they entirely harmless, but also absolutely honest, never stealing from each other or from outsiders. When we made the first trip up to the snow, Mrs. Carriker was along, and we left our camp for three days alone and unprotected, returning to find everything exactly as we had left it. We had intended making another camp at about 10,000 or 11,000 feet in the upper Macotama Valley, but were unable to secure oxen from the Indians to carry our outfit. The old chief had promised this, but after I had refused to give him a jug of rum (which I did not have) he rose up in his chiefly dignity and not only refused us oxen, but absolutely prohibited us from going to the paramos or collecting on them, or at any point higher than San Miguel. Naturally this did not coincide with our plans, so I called the old fellow's "bluff" by going alone up the valley the next day to 11,000 feet. Needless to say, nothing happened then or thereafter, and we continued our excursions unmolested, except that whenever we went to the paramos, we were invariably "shadowed" by an Indian, whom we never appeared to see.

Space does not allow, nor would it be exactly fitting, to here relate all the comic, serious, and near-tragic incidents which occurred during our five weeks' stay at San Miguel. Suffice it to say that in spite of the great difficulties and the tremendous distance to be tramped over every day, we were able by the heroic assistance of Mrs. Carriker and the loyalty of our native assistant to accomplish the object of the expedition, and to secure a most creditable collection of the birds of the region, but very few species which were known to inhabit these parts escaping us. The spring rains were now beginning, and our provisions becoming exhausted, we began packing on April 24 and broke camp the next day, having secured oxen from Pueblo Viejo. We arrived at Dibulla on April 28, after a day lost in Pueblo Viejo, making the journey without special incident. On the evening of April 29 we embarked in a canoe for Rio Hacha, where we arrived at dawn the next morning. Landing was made at once, and as soon as quarters were secured at the hotel and breakfast was eaten, we were off shooting. Seven days were spent collecting here and great success was had, over three hundred specimens being secured. However, the sudden change from the more temperate conditions at San Miguel to the torrid heat of Rio Hacha was almost unbearable. It was not possible to stay out under the broiling sun after 9 or 9:30 A. M., and

even then one would return nearly prostrated with the heat and thirst, while many birds shot early in the morning would be in bad shape for skinning by mid-afternoon.

On the evening of May 9 we embarked in a small schooner for Santa Marta, and after a pleasant, uneventful voyage of thirty hours reached our destination, having been absent four months, and having collected almost two thousand specimens of birds and mammals. On this trip, as well as in subsequent work in Colombia, the eminently successful results attained have been largely due to the untiring energy, fearless courage, and unusual skill of Mrs. Carriker, who deserves full praise and credit. The endless inconveniences, privations, and hardships which we were forced to undergo were enough to shake the stoutest heart, and I venture to say that few women would have stood up under them day after day and month after month without complaint or reproach.

After our return to Santa Marta, other matters prevented further collecting for more than a year. However, on September 14, 1915, a trip was made to Tucurínca, on the western littoral, midway between Ciénaga and Fundación, where the writer spent ten days working alone, except for a native hunter. On October 5 a second trip was made to Fundación, on which occasion Mrs. Carriker was along. Two weeks were spent there, and much valuable additional material secured. This work was practically the last done by the junior author in the Santa Marta region up to the summer of 1920, when he was able to spend a few weeks in a reconnaissance of the lowlands southeast of the Sierra Nevada. A full account of this expedition appears beyond.¹¹ Much has been accomplished, but much still remains to be done, and the field cannot be regarded as exhausted.

According to the record the collection of birds made by the junior author in the Santa Marta region consists of 5,355 specimens, of which 4,244 are deposited in the Carnegie Museum, 1,022 in the Academy of Natural Sciences of Philadelphia, and 89 in his own cabinet. The entire collection has been utilized in the preparation of the present report. Not only is this by far the largest collection ever made in this region, but it is also the most complete, including as it does representatives of no less than four hundred and fifty-eight forms out of the total of five hundred and fourteen on record. Of the remaining

¹¹ See Appendix.

fifty-six forms sixteen were positively identified in the field, but no specimens were secured. On the other hand no less than seventy-seven species and subspecies have been added to the Santa Marta list as a result of the work of the junior author, while thirty-six species and subspecies have been described as new to science on the basis of material collected by him in this region.

SPECIES DESCRIBED FROM THE SANTA MARTA REGION.

It will be of interest at this point to give a list of the various species and subspecies which have been described from the Santa Marta region from 1847 down to the present time, one hundred and sixty-one in number. Not all of these are valid names, of course, and not all of them represent forms which are confined to this region; in fact, it is known that in several instances the assigned locality must have been a mistake. But even after all allowances have been made, few continental regions so restricted in area can boast so many peculiar forms. Of such no less than seventy-two are now known, and very probably more remain to be discovered. In addition there are fifty-four forms, now considered valid, which were originally described from the region, but have been found to range beyond its confines as here understood.

List of Species and Subspecies of Birds which have been described from the Santa Marta region, with the names under which they are now known.

- Rupornis magnirostris insidiatrix* Bangs and Penard, 1918.
Crypturus soui mustelinus Bangs, 1905 = *Crypturornis soui mustelinus*.
Crypturus idoneus Todd, 1919 = *Crypturornis idoneus*.
Eupsychortyx cristatus littoralis Todd, 1917 = *Eupsychortyx leucopogon littoralis*.
Odontophorus atrifrons Allen, 1900.
Chamæpetes sanctæ-marthæ Chapman, 1912.
Ortalis ruficrissa Sclater and Salvin, 1871 = *Ortalis ruficrissa*.
Penelope colombiana Todd, 1912.
Penelope greyyi Gray, 1866 = *Penelope marail*. (Locality erroneous.)
Crax annulata Todd, 1915.
Neocrex colombianus Bangs, 1898.
Parra melanopygia Sclater, 1857 = *Jacana nigra*.

- Geotrygon linearis infusca* Bangs, 1900 = *Oreopeleia linearis infusca*.
Zenaida pentheria Bonaparte, 1854 = *Zenaida ruficauda ruficauda*.
Pionus sordidus saturatus Todd, 1915.
Psittacula pyrrilia Bonaparte, 1853 = *Pyrrilia pyrrilia*. (Locality probably erroneous.)
Psittacula passerina cyanophanes Todd, 1915.
Pyrrhura viridicata Todd, 1913.
Aratinga æuginosa occidentalis Todd, 1915 = *Eupsittula pertinax æuginosa*.
Glaucidium brasilianum medianum Todd, 1916.
Nyctidromus albicollis gilvus Bangs, 1902.
Setopagis heterurus Todd, 1915 = *Setopagis parvula heterura*.
Momotus semirufus Sclater, 1853 = *Urospatha martii semirufa*. (Locality probably erroneous.)
Momotus subrufescens Sclater, 1853 = *Momotus subrufescens subrufescens*.
Nonnula frontalis pallescens Todd, 1919.
Hypnelus ruficollis decolor Todd, 1922.
Galbula ruficauda pallens Bangs, 1898.
Aulacorhamphus lautus Bangs, 1898 = *Aulacorhynchus lautus*.
Veniliornis oleaginus exsul Todd, 1920.
Chrysoptilus ujhelyii von Madarasz, 1912 = *Chrysoptilus punctigula ujhelyii*.
Chloronerpes yucatenensis alleni Bangs, 1902 = *Chloronerpes rubiginosus alleni*.
Melanerpes wagleri sanctæ-martæ Bangs, 1898 = *Centurus rubricapillus rubricapillus*.
Pharomachrus festatus Bangs, 1899.
Trochilus floriceps Gould, 1853 = *Simonula floriceps*.
Acestrura astreans Bangs, 1899 = *Chatocercus astreans*.
Oxygogon cyanolæmus Salvin and Godman, 1880.
Metallura districta Bangs, 1899.
Rhamphomicron dorsale Salvin and Godman, 1880 = *Ramphomicron dorsale*.
Lafresnayea liriopæ Bangs, 1910 = *Lafresnaya lafresnayi liriopæ*.
Leucuria phalerata Bangs, 1898 = *Helianthea phalerata*.
Panychlora russata Salvin and Godman, 1881 = *Chlorostilbon russatus*.
Lepidopyga lillie Stone, 1917.

- Thalucrania calina* Bourcier, 1856 = *Lepidopyga caruleogularis*.
(Locality probably erroneous.)
- Campylopterus phainopeplus* Salvin and Godman, 1879.
- Phaethornis longirostris susurrus* Bangs, 1901 = *Phaethornis longirostris susurrus*.
- Dendrocincla olivacea anguina* Bangs, 1898 = *Dendrocincla lafresnayei lafresnayei*.
- Picolaptes lacrymiger sanctæ-marthæ* Chapman, 1912 = *Thripobrotus lacrymiger sanctæ-marthæ*.
- Xiphocolaptes fortis* Heine, 1860 = *Xiphocolaptes procerus fortis*.
(Locality doubtful.)
- Dendroplex picirostris* Lafresnaye, 1847 = *Dendroplex picirostris picirostris*.
- Automolus rufpectus* Bangs, 1898.
- Xenicopsis anxius* Bangs, 1902 = *Xenicopsis montanus anxius*.
- Leptasthenura andicola extima* Todd, 1916.
- Synallaxis albescens perpallida* Todd, 1916.
- Synallaxis fusciorufa* Sclater, 1882.
- Siptornis hellmayri* Bangs, 1907 = *Acrorchilus hellmayri*.
- Synallaxis fuscifrons* von Madarasz, 1913 = *Leptoxyrura cinnamomea fuscifrons*.
- Premnoplex coloratus* Bangs, 1902 = *Premnoplex brunnescens coloratus*.
- Cinclodes oreobates* Scott, 1900.
- Furnarius agnatus* Sclater and Salvin, 1873 = *Furnarius leucopus agnatus*.
- Furnarius leucopus exilis* Todd, 1920.
- Sclerurus albigularis propinquus* Bangs, 1899.
- Grallaria spatiator* Bangs, 1898 = *Grallaria rufula spatiator*.
- Grallaria varia carmelitæ* Todd, 1915 = *Grallaria regulus carmelitæ*.
- Grallaria bangsi* Allen, 1900.
- Conopophaga browni* Bangs, 1899 = *Grallaricula ferrugineipectus*.
- Formicarius moniliger virescens* Todd, 1915 = *Formicarius analis virescens*.
- Gymnocichla nudiceps sancta-martæ* Ridgway, 1908. (Locality doubtful.)
- Cercomacra nigricans* Sclater, 1858.
- Ramphocœnis sanctæ-marthæ* Sclater, 1862 = *Ramphocœnis rufiventris sanctæ-marthæ*.

- Dryophila caudata hellmayri* Todd, 1915.
Myrmotherula sanctæ-martæ Allen, 1900 = *Myrmopagis schisticolor sanctæ-martæ*.
Hylophilus brunneus Allen, 1900 = *Myrmopagis schisticolor sanctæ-martæ*.
Erionotus punctatus subcinereus Todd, 1915 = *Erionotus punctatus gorgonæ*.
Thamnophilus melanonotus Sclater, 1855 = *Sakesphorus melanonotus*.
Hypolophus pulchellus phainoleucus Todd, 1915 = *Sakesphorus pulchellus*.
Scytalopus sanctæ-martæ Chapman, 1915.
Scytalopus latebricola Bangs, 1899.
Tityra semifasciata columbiana Ridgway, 1906.
Platypsaris homochrous canescens Chapman, 1912.
Pachyrhamphus cinereiventris Sclater, 1862 = *Pachyrhamphus polychropterus cinereiventris*.
Attila rufipectus Allen, 1900.
Attila parvirostris Allen, 1900.
Attila idiotes Todd, 1916.
Pipreola aureipectus decora Bangs, 1899 = *Euchlornis aureopectus decora*.
Manacus manacus abditivus Bangs, 1899.
Myiodynastes chrysocephalus intermedius Chapman, 1912.
Myiodynastes nobilis Sclater, 1859 = *Myiodynastes maculatus maculatus*.
Sayornis latirostris fumigatus Todd, 1920.
Myiobius assimilis Allen, 1900 = *Pyrrhomyias vieillotioides assimilis*.
Leptopogon amaurocephalus diversus Todd, 1913.
Mionectes olivaceus galbinus Bangs, 1902.
Myiopagis placens pallens Bangs, 1902 = *Elænia viridicata pallens*.
Elænia browni Bangs, 1898 = *Elænia pudica pudica*.
Elænia sororia Bangs, 1898 = *Elænia chiriquensis albivertex*.
Phyllomyias semifusca Sclater, 1862 = *Phæomyias murina incomta*.
Tyranniscus nigricapillus flavimentum Chapman, 1912.
Tyranniscus chrysops minimus Chapman, 1912.
Othæca olivacea Allen, 1900 = *Tyranniscus improbus*.
Serpophaga cinerea cana Bangs, 1904.
Haplocercus paulus Bangs, 1899 = *Haplocercus meloryphus*.

- Rhynchocyclus sulphurescens exortivus* Bangs, 1908.
Rhynchocyclus flaviventris aurulentus Todd, 1913.
Craspedoprion æquinoctialis flavus Chapman, 1914.
Todirostrum nigriceps Sclater, 1855.
Onychorhynchus mexicanus fraterculus Bangs, 1902.
Myiopatis montensis Bangs, 1899 = *Mecocerculus leucophrys setophagoides*.
Oethæa jesupi Allen, 1900 = *Oethæa diadema jesupi*.
Oethæa poliogastra Salvin and Godman, 1880 = *Oethæa poliogastris*.
Oethodiacta pernix Bangs, 1899.
Orodynastes striaticollis columbianus Todd, 1913 = *Orodynastes striaticollis striaticollis*.
Donacobius brachypterus von Madarasz, 1913 = *Donacobius atricapillus brachypterus*.
Merula albiventris fusa Bangs, 1899 = *Turdus albiventer ephippialis*.
Planesticus luridus Bonaparte, 1854 = *Turdus grayi incomptus*.
Merula incompta Bangs, 1898 = *Turdus grayi incomptus*.
Merula phæopyga minuscula Bangs, 1898 = *Turdus phæopygus phæopygus*.
Planesticus olivater sanctæ-martæ Todd, 1913 = *Turdus olivater sanctæ-martæ*.
Merula gigas cacozela Bangs, 1898 = *Semimerula cacozela*.
Catharus melpomene sierræ Hellmayr, 1919 = *Catharus melpomene aurantirostris*.
Catharus fuscater sanctæ-martæ Ridgway, 1904.
Cinclus rivularis Bangs, 1899.
Microcerculus corrasus Bangs, 1902 = *Microcerculus squamulatus corrasus*.
Hemicorhina hilaris bangsi Ridgway, 1903.
Hemicorhina anachoreta Bangs, 1899 = *Hemicorhina leucophrys anachoreta*.
Troglodytes monticola Bangs, 1899.
Troglodytes musculus atopus Oberholser, 1904.
Thryothorus latus Bangs, 1898 = *Pheugopedius latus*.
Pheugopedius fasciato-ventris cognatus Todd, 1915 = *Pheugopedius fasciatoventris fasciatoventris*.
Campylorhynchus pardus Sclater, 1858 = *Helcodytes nuchalis*.
Buglodytes albicilius Bonaparte, 1854 = *Helcodytes minor albicilius*.

- Cyclarhis flavipectus canticus* Bangs, 1898.
Stelgidopteryx ruficollis æqualis Bangs, 1901.
Basileuterus cabanisi indignus Todd, 1916.
Basileuterus conspicillatus Salvin and Godman, 1880.
Setophaga flavivertex Salvin, 1887 = *Myioborus flavivertex*.
Hemispingus basilicus Todd, 1913.
Dacnis naja Bangs, 1898 = *Dacnis cerebicolor naja*.
Diglossa nocticolor Bangs, 1898.
Sturnella magna paralius Bangs, 1901.
Icterus mesomelas carrikeri Todd, 1917.
Cassidix oryzivora violea Bangs, 1900.
Ostinops decumanus melanterus Todd, 1917.
Phanicothraupis erythrolæma Sclater, 1861 = *Habia fuscicauda erythrolæma*. (Locality erroneous.)
Nemosia pileata hypoleuca Todd, 1916.
Piranga faceta Bangs, 1898 = *Piranga testacea faceta*.
Sporathraupis cyanocephala margarita Chapman, 1912.
Pacillothraupis melanogenys Salvin and Godman, 1880.
Tangara viridissima toddi Bangs and Penard, 1921.
Euphonia fulvicrissa Sclater, 1857 = *Tanagra fulvicrissa fulvicrissa*.
 (Locality erroneous.)
Chlorophonia frontalis psittacina Bangs, 1902.
Saltator plumbeus Bonaparte, 1853 = *Saltator olivascens plumbeus*.
Cardinalis granadensis Lafresnaye, 1847 = *Richmondia phænicea*.
Cyanocompsa concreta sanctæ-martæ Bangs, 1898 = *Cyanocompsa cyanoides cyanoides*.
Catamenia oreophila Todd, 1913 = *Idiospiza oreophila*.
Catamenia alpica Bangs, 1902.
Sporophila haplochroma Todd, 1912.
Sycalis browni Bangs, 1898 = *Sicalis citrina browni*.
Haplospiza nivaria Bangs, 1899 = *Phrygilus unicolor nivarius*.
Buarremon basilicus Bangs, 1898.
Buarremon melanocephalus Salvin and Godman, 1880 = *Atlapetes melanocephalus*.
Arremonops conirostris caniens Bangs, 1898 = *Arremonops conirostris conirostris*.
Spinus spinescens capitaneus Bangs, 1898.

Besides the above there are a few species for which authors other than the describers have assigned type-localities in the Santa Marta region, as follows:

- Brotoeris jugularis jugularis*, Chapman, 1917.
Malacoptila mystacalis, Chapman, 1917.
Hypnelus ruficollis ruficollis, Chapman, 1917 (error).
Dendrocinclafresnayei lafresnayei, Chapman, 1917.
Icterus auricapillus von Berlepsch and Hartert, 1902.
Arremon schlegeli, von Berlepsch, 1910.

NORTH AMERICAN MIGRANTS.

No less than sixty-six species of North American birds have been recorded from the Santa Marta region—considerably more than have recently been found in all the rest of Colombia. In this number are included several species new to the South American list, recorded here for the first time. The groups most largely represented are the shore-birds, flycatchers, and wood-warblers. Most of these are true winter residents, but some few species, as for example the Bobolink, *Dolichonyx oryzivorus*, go still farther south for the winter, and are known here only as transients. The great majority of the forms are those which come from the eastern United States and Canada, but some of the shore-birds are arctic in their breeding range. *Vireosylva flavoviridis flavoviridis*, which we here assign to the category of non-resident species, seems to have come from Central America, however; while *Tyrannus curvirostris curvirostris*, *Vireosylva calidris calidris*, and *Vireosylva calidris barbatula* are clearly from the West Indies. For several of the species on the list there are only one or two records each—a circumstance which is significant, indicating that these records pertain to waifs or strays, accidentally caught and carried along in the great tide of migrants which crosses back and forth at the proper seasons between this northernmost part of South America on the one hand and the West Indies on the other. On the basis of Palmen's theory this would suggest the former existence of a land-bridge between these two regions, but in any case there can be no question that this route is a favorite one for the entry of northern migrants into Colombia, and accounts for the large number of species of this class known from this restricted area. No particular attention seems to

be paid to zonal boundaries by these migrant birds. Of especial interest in this connection, as suggesting how certain boreal forms may have originally reached the Colombian highlands, may be cited the finding of *Geothlypis trichas trichas* on the Paramo de Chiruqua, at an elevation of 15,000 feet, on April 21, 1914. Not a few of the available records indicate an earlier date of arrival in the fall and a later date of departure in the spring than our experience in the north would lead us to expect. For example, *Tringa solitaria solitaria* has been recorded in the fall migration as early as August 15 (1913), while the latest date in the spring for *Nuttallornis borealis* is May 13, 1899. The few species in the subjoined list which are queried may possibly breed within the limits of the present region, but the evidence is not conclusive.

List of North American Migrants.

(?) <i>Ardea herodias</i> subsp.	<i>Capella delicata</i>
(?) <i>Butorides virescens virescens</i>	<i>Charadrius semipalmatus</i>
<i>Buteo platypterus platypterus</i>	<i>Coccyzus americanus</i>
<i>Falco peregrinus anatum</i>	<i>Tyrannus curvirostris curvi-</i>
<i>Falco columbarius columbar-</i>	<i>rostris</i>
<i>ius</i>	<i>Tyrannus tyrannus</i>
(?) <i>Pandion haliaetus carolinensis</i>	<i>Myiarchus crinitus</i>
<i>Porzana carolina</i>	<i>Empidonax traillii brewsteri</i>
(?) <i>Chroicocephalus atricilla</i>	<i>Empidonax virescens</i>
<i>Hydrochelidon nigra surina-</i>	<i>Myiochanes virens</i>
<i>mensis</i>	<i>Nuttallornis borealis</i>
<i>Thalasseus maximus</i>	<i>Hylocichla fuscescens fusc-</i>
<i>Bartramia longicauda</i>	<i>cens</i>
<i>Actitis macularia</i>	<i>Hylocichla minima aliciae</i>
<i>Tringa solitaria solitaria</i>	<i>Hylocichla ustulata swainsoni</i>
<i>Neoglottis flavipes</i>	<i>Lanius flavifrons</i>
<i>Neoglottis melanoleuca</i>	<i>Vireosylva olivacea</i>
<i>Pisobia minutilla</i>	<i>Vireosylva flavoviridis flavo-</i>
<i>Pisobia maculata</i>	<i>viridis</i>
<i>Tryngites subruficollis</i>	<i>Vireosylva calidris calidris</i>
<i>Ereunetes mauri</i>	<i>Vireosylva calidris barbatula</i>
<i>Ereunetes pusillus</i>	<i>Hirundo rustica erythrogaster</i>
<i>Micropalama himantopus</i>	<i>Setophaga ruticilla</i>

<i>Geothlypis trichas trichas</i>	<i>Dendroica caerulescens caerulescens</i>
<i>Sciuirus noveboracensis noveboracensis</i>	<i>Dendroica aestiva aestiva</i>
<i>Sciuirus noveboracensis notabilis</i>	<i>Vermivora peregrina</i>
<i>Sciuirus motacilla</i>	<i>Vermivora pinus</i>
<i>Sciuirus aurocapillus aurocapillus</i>	<i>Vermivora chrysoptera</i>
<i>Oporornis philadelphia</i>	<i>Protonotaria citrea</i>
<i>Oporornis agilis</i>	<i>Mniotilta varia</i>
<i>Oporornis formosus</i>	<i>Dolichonyx oryzivorus</i>
<i>Dendroica striata</i>	<i>Icterus galbula</i>
<i>Dendroica castanea</i>	<i>Icterus spurius</i>
<i>Dendroica fusca</i>	<i>Piranga rubra rubra</i>
<i>Dendroica virens virens</i>	<i>Hedymeles ludovicianus</i>
	<i>Spiza americana</i>

LIFE-ZONES OF THE SANTA MARTA REGION.

While it has long been known in a general way that the bird-life of the median and higher elevations of the mountains in tropical America differed materially from that of the lower levels, and while many of these alticoline forms have been known to science for a considerable period, it would seem that practically no serious effort was ever made to study them from the distributional standpoint (on any extensive scale at least), or to correlate and systematize such faunal data as were already available, prior to the appearance of Dr. Chapman's recent epoch-making work on the distribution of bird-life in Colombia. The discovery that the life of the Neotropical Region, taken as a whole, falls into four primary divisions, or natural life-zones, each characterized by its own assemblage of forms, marks the initial step in the development of the subject. The second step is properly the determination of the minor faunal areas of each zone, involving a study of their respective characters, limitations, and relationships. We accept the general conclusions reached by Dr. Chapman with reference to the faunal divisions to be recognized in Colombia, as well as with regard to the nomenclature to be employed. The same life-zones occur in the Santa Marta region as in the Andes, but owing to the differences in humidity and temperature existing on the several slopes of the Sierra Nevada and its encircling lowlands it is a more difficult matter

to assign exact altitudinal limits to these belts, which are of course primarily dependent upon the conditions in question. On the north slope of the Sierra Nevada, for instance, the several zones overlap to an extent unknown in the Andes, all the zones above the Tropical dropping down considerably below the usual limits, so far as their lower borders are concerned. Reserving this and other features of the case for fuller discussion further on, we would make the following zonal divisions in the Santa Marta region:

Tropical Zone	0 to	4,500 feet.
Subtropical Zone	4,500 to	9,000 feet.
Temperate Zone	9,000 to	11,000 feet.
Paramo Zone	11,000 feet to the snow-line	(15,000 feet).

These figures are general and average only; they require modification to allow for local conditions.

By far the larger number of species are confined to one zone, and few are known to range beyond two zones. Allowance must necessarily be made for the cases where the forms normally belonging to a given zone invade the limits of the adjacent zone and mingle with its constituents. The various zones are of course determined, not by any arbitrary altitudinal limits, but by their several characteristic elements or species; if the ranges of these are not sharply defined, then the delimitation of the zones becomes indefinite to that extent. There is another phase of the distribution of bird-life in the tropics which must be taken into consideration in referring the various species to their respective zones, especially in the case of the three upper zones. This is altitudinal migration in search of food, or a natural tendency to wander about when not confined to one place by the rearing of young. In the lists which follow the effort has been, so far as our present knowledge and experience permits, to make allowance for these movements and to relegate each species to the zone in which it breeds, for this is its real habitat. With some species this is comparatively easy, as with the terrestrial or semi-terrestrial dwellers in the forest, for these are almost entirely sedentary in their habits, but there are others, especially among the hummingbirds, fruit-eaters, and the dwellers in the tree-tops, which present a more puzzling problem. To solve this question accurately would necessitate continuous collecting throughout the year in all the different zones, a matter quite impossible

for the ordinary collector who hopes to achieve any large success or cover any extensive area.

The Tropical Zone is the only zone in the Santa Marta region which is continuous with the same faunal area in the rest of Colombia, the upper zones all being isolated from the corresponding belts in the Andes by the interposition of the Tropical. The Tropical, being thus more accessible than the upper zones, has received by far the largest proportion of the total life of the region. The following table compares the number and relative percentages of the constituent elements of the resident fauna of the Santa Marta region with that of the Andes as a whole, species alone being considered.

Zone.	Santa Marta Region.		Colombian Andes.	
	No. of Species.	Percentage.	No of Species.	Percentage.
Tropical	337	76.4	685	63.4
Subtropical	75	17.0	273	25.2
Temperate	22	5.0	104	9.6
Paramo	7	1.6	19	1.8

The falling off in the number of species with the progressive increase of altitude is thus seen to be more abrupt than in the Andes, and gives an insular character to the fauna of the Santa Marta region which we shall see hereafter is borne out in other respects.

THE TROPICAL ZONE.

Character and Extent.—The Tropical Zone of the Santa Marta region not only occupies a larger area than do the remaining zones combined, but also supports by far the most birds, both species and individuals, as well as the greatest variety. It comprises in general all that part of the region lying between sea-level and the lower edge of the ordinary cloud strata. On the San Lorenzo and its connecting ridge, as well as on the southern spur of the Sierra Nevada, this line falls at between 4,000 and 4,500 feet, but on the north slope of the main Sierra Nevada, facing the Caribbean Sea, it drops down to 2,000 feet or even lower. As a result of conditions already explained there is here a heavy humid forest extending right down to the seacoast, and a consequent lowering and very confusing overlapping of the life-zones.

So far as we are able to determine from the scanty data available the upper limit of the Tropical Zone on the south slope of the Sierra Nevada is normal, agreeing with that observed on the San Lorenzo, but local conditions may in some places tend to carry certain of the tropical species up to higher levels in this part. Even on the slopes of the San Lorenzo and Horqueta a considerable number of what must be considered as species of the Tropical Zone are known to advance up to 5,000 feet, which is the average altitudinal limit of this zone in the Andean system of Colombia, according to Dr. Chapman.

Constituent Species.—No less than three hundred and forty-four species and subspecies of resident birds have thus far been recorded from this zone in the Santa Marta region. This takes no account of a few species, evidently of Subtropical affinities, which are known to range lower down at intervals. In the subjoined list such species as are known to range upward into the Subtropical Zone or beyond are followed by an asterisk.

Birds of the Tropical Zone.

* <i>Anhinga anhinga</i>	<i>Sarcoramphus papa</i> *
* <i>Phalacrocorax vigua vigua</i>	<i>Cathartes aura aura</i> *
* <i>Pelecanus occidentalis</i>	<i>Coragyps urubu</i>
* <i>Ixobrychus erythromelas</i>	<i>Chondrohierax uncinatus uncinatus</i>
* <i>Doriponus agami</i>	* <i>Odontoriorchis palliatus</i>
* <i>Hydranassa tricolor ruficollis</i>	* <i>Gampsonyx swainsoni</i>
* <i>Florida cærulea</i>	<i>Harpagus bidentatus</i>
* <i>Pilherodius pileatus</i>	<i>Ictinia plumbea</i>
* <i>Butorides striatus</i>	* <i>Rostrhamus sociabilis</i>
<i>Tigrisoma lineatum</i>	* <i>Geranospiza cærulescens</i>
† <i>Tigrisoma salmoni</i>	† <i>Accipiter superciliosus exitiosus</i> *
* <i>Nycticorax nycticorax nævius</i>	<i>Accipiter bicolor bicolor</i>
* <i>Nyctanassa violacea violacea</i>	* <i>Astur poliogaster</i>
<i>Cochlearius cochlearius</i>	* <i>Buteo abbreviatus</i>
* <i>Ajaia ajaia</i>	* <i>Buteo albicaudatus</i> subsp.
* <i>Theristicus caudatus</i>	* <i>Buteo brachyurus</i>
* <i>Phimosus berlepschi</i>	* <i>Heterospizias meridionalis meridionalis</i>
<i>Mycteria americana</i>	
* <i>Dendrocygna discolor</i>	
* <i>Querquedula cyanoptera</i>	

- **Morphnus urubitinga*
 **Morphnus anthracinus anthracinus*
 **Asturina nitida nitida*
Rupornis magnirostris insidiatrix
 **Busarellus nigricollis*
 **Urubitornis solitarius*
 **Spizaetus ornatus*
 **Spizaetus tyrannus*
*Oroaetus isidori**
 **Herpetotheres cachinnans cachinnans*
Micrastur brachypterus brachypterus
Falco albigularis albigularis
 **Falco fuscocarulescens fuscocarulescens*
*Falco sparverius isabellinus**
 **Polyborus cheriway cheriway*
 **Milvago chimachima cordata*
 **Ibycter americanus*
Tinamus major ruficeps
Crypturornis soui mustelinus
 **Crypturornis idoneus*
 **Eupsychortyx cristatus cristatus*
 **Eupsychortyx leucopogon littoralis*
 **Eupsychortyx leucopogon decoratus*
 **Ortalis garrula*
 **Ortalis ruficrissa*
Penelope aquatorialis
 **Crax annulata*
Crax alberti
 **Aramus scolopaceus scolopaceus*
 **Aramides cajaneus chircote*
 **Aramides axillaris*
- †*Neocrex colombianus*
Creciscus albigularis
 **Ionornis martinicus*
 **Phatusa chloripoda*
 **Thalasseus* sp.
 **Himantopus mexicanus*
 **Charadrius collaris*
 **Pagolla wilsonia crassirostris*
 **Belonopteris cayennensis cayennensis*
 **Hamatopus palliatus palliatus*
 **Edicnemus bistriatus vocifer*
 **Jacana nigra*
 †*Oreopeleia violacea albiventer*
Oreopeleia montana
Leptotila verreauxi verreauxi
Claravis pretiosa
Chamaepelia rufipennis rufipennis
 **Chamaepelia passerina albivitta*
 **Scardafella squammata ridgwayi*
 **Crossophthalmus gymnophthalmos*
Lepidænas speciosa
 **Chlorænas rufina pallidicrissa*
 **Amazona ochrocephala panamensis*
 **Amazona amazonica amazonica*
 **Pionus menstruus*
 **Psittacula passerina cyanophanes*
 **Psittacula spengeli*
 **Brotogeris jugularis jugularis*
 **Eupsittula pertinax aruginosa*
 †*Aratinga wagleri**
 **Thectocercus hamorrhous neoxenus*
Ara militaris

- **Ara chloroptera*
 **Ara araruna*
Crotophaga ani
 **Crotophaga sulcirostris sulcirostris*
 **Crotophaga major*
 **Tapera nævia nævia*
Piaya columbiana
 **Coccyzua rutila gracilis*
 **Coccyzus lansbergi*
 **Coccyzus melacoryphus*
 **Glaucidium brasilianum medianum*
Ciccaba virgata virgata
Pulsatrix perspicillata perspicillata
 **Otus choliba margaritæ*
 †*Rhinoptynx clamator*
Steatornis caripensis caripensis
 **Chordeiles acutipennis acutipennis*
 **Nyctidromus albicollis gilvus*
*Antrostomus rufus rufus**
 **Setopagis parvula heterura*
 **Thermochalcis cayennensis albicauda*
Momotus subrufescens subrufescens
 **Chloroceryle ænea ænea*
 **Chloroceryle inda*
Chloroceryle americana americana
 **Chloroceryle amazona*
 **Megaceryle torquata torquata*
 **Nonnula frontalis pallescens*
 **Hypnelus ruficollis ruficollis*
 **Hypnelus ruficollis decolor*
 **Notharchus hyperhynchus* subsp.
 **Galbula ruficauda pallens*
Pteroglossus torquatus nuchalis
Ramphastos piscivorus brevicaarinatus
 **Picumnus cinnamomeus cinnamomeus*
 **Picumnus squamulatus*
 **Veniliornis kirkii cecilii*
*Scapanus melanoleucus malherbii**
Ceophlæus lineatus mesorhynchus
 **Chrysoptilus punctigula ujhelyii*
 **Chloronerpes chrysochloros aurosus*
 **Centurus rubricapillus rubricapillus*
Chrysotrogon caligatus columbianus
 **Curucujus melanurus macrourus*
 †*Chætura spinicauda spinicauda*
 †*Streptoprocne zonaris albicincta*
Chrysolampis elatus
Florisuga mellivora
 †*Chlorostilbon russatus*
 **Chlorostilbon haeberlinii*
 **Chlorostilbon caribæus*
 **Lepidopyga lillie*
 **Lepidopyga luminosa*
 **Damophila julie julie*
*Colibri delphinae**
Anthracothorax nigricollis nigricollis
Saucerottia saucerrottei warscewiczii
 **Amazilia tzacatl tzacatl*
 **Leucippus fallax fallax*
Chalybura buffonii æneicauda
Hylocharis cyanus viridiventris

- Anthoscenus longirostris longirostris*
 *Threnetes ruckeri subsp.
 *Glaucis hirsuta affinis
 †Phaethornis striigularis striigularis
 *Phaethornis anthophilus anthophilus
 †Phaethornis longirostris susurrus
Dendrocinclafresnayei lafresnayei
 *Campylorhamphus trochilirostris venezuelensis
 *Thripobrotus albolineatus
Xiphorhynchus nanus nanus
 *Dendroplex picirostris picirostris
 *Pacilurus candei candei
 *Pacilurus candei venezuelensis
*Synallaxis albenscens albigularis**
 *Synallaxis albenscens perpallida
 *Leptoxyura cinnamomea fuscifrons
Xenops genibarbis neglectus
 *Furnarius leucopus agnatus
 *Furnarius leucopus exilis
 *Formicarius analis virescens
Myrmeciza longipes panamensis
 *Cercomacra nigricans
 *Ramphocenus rufiventris sanctæ-marthæ
 *Microrhopias intermedia
 *Myrmopagis melæna melæna
Erionotus punctatus gorgonæ
 *Thamnophilus nigriceps
 *Thamnophilus radiatus nigricristatus
 *Sakesphorus melanonotus
 *Sakesphorus pulchellus
 *Taraba transandean granadensis
Tityra semifasciata columbiana
 *Erator albitorques
Platypsaris homochrous canescens
 †Pachyrhamphus albogriseus ornatus
 *Pachyrhamphus polychropterus cinereiventris
 *Pachyrhamphus cinnamomeus magdalenæ
 *Pachyrhamphus rufus
Attila parvirostris
 *Attila idiotes
Schiffornis amazonus stenorhynchus
 †Pipra erythrocephala erythrocephala
Chiroxiphia lanceolata
Manacus manacus aditivus
Muscivora tyrannus
Tyrannus melancholicus chloronotus
 *Pitangus lictor
 *Pitangus sulphuratus rufipennis
Megarynchus pitangua pitangua
Myiodynastes maculatus maculatus
Myiarchus tuberculifer tuberculifer
 *Myiarchus ferox panamensis
 *Myiarchus tyrannulus tyrannulus
Sayornis latirostris fumigatus
 †Myiophobus fasciatus fasciatus

- Empidochanes fuscatus cabanisi*
Myiochanes brachytarsus subsp.
 **Terenotriccus erythrurus fulvicularis*
 **Pyrocephalus rubinus saturatus*
 **Capsiempis flaveola leucophrys*
 **Leptopogon amaurocephalus diversus*
 †*Mionectes olivaceus galbinus**
Pipromorpha olcaginea parca
Myiozetetes similis columbianus
 **Myiozetetes cayanensis hellmayri*
Legatus leucophaius
 **Elania viridicata pallens*
 **Elania gaimardii bogotensis*
 **Elania gaimardii macilvainii*
 †*Elania chiriquensis albivertex*
Elania flavogaster flavogaster
 **Sublegatus glaber*
Phyllomyias griseiceps griseiceps
 **Camptostoma pusillum pusillum*
Phæomyias murina incomta
 **Phæomyias tenuirostris*
 **Microtriccus brunneicapillus dilutus*
 †*Tyranniscus chrysops minimus*
 **Tyrannulus elatus panamensis*
 **Inezia caudata intermedia*
 †*Hapalocercus meloryphus*
Rhynchocyclus sulphurescens exorticus
Rhynchocyclus flaviventris aurentus
Craspedoprion æquinoctialis flavus
 †*Platytriccus albogularis neglectus*
- Atalotriccus pilaris pilaris*
 **Todirostrum sylvia superciliare*
Todirostrum nigriceps
 **Todirostrum cinereum cinereum*
 **Oncostoma olivaceum*
 **Euscarthmus impiger*
Onychorhynchus mexicanus fraterculus
 **Machetornis rixosa flavigularis*
 **Arundinicola leucocephala*
 **Fluvicola pica*
 **Mimus gilvus columbianus*
 †*Mimus gilvus melanopterus*
 **Donacobius atricapillus brachypterus*
 †*Platycichla flavipes venezuelensis*
Turdus albiventer ephippialis
 **Turdus grayi incomptus*
Turdus phæopygus phæopygus
 †*Catharus melpomene auranthrostris*
 **Polioptila plumbeiceps*
 **Polioptila bilineata bilineata*
 †*Microcerculus squamulatus corrasus*
 **Thryophilus albipectus venezuelanus*
 **Thryophilus leucotis leucotis*
Thryophilus rufalbus minlosi
Troglodytes musculus atopus
Pheugopedius latus
 **Pheugopedius fasciatoventris fasciatoventris*
 **Heleodytes nuchalis*
 **Heleodytes curvirostris*
 **Heleodytes minor albicilius*
*Cyanocorax affinis affinis**
 **Cyclarhis flavipectus canticus*

- Pachysylvia aurantiifrons aurantiifrons*
 **Pachysylvia flavipes flavipes*
Vireosylva chivi vividior
 **Iridoprocne albiventer*
 **Stelgidopteryx ruficollis æqualis*
 **Progne chalybea chalybea*
 †*Tersina viridis occidentalis**
Basileuterus delatrii mesochrysus
 †*Basileuterus cabanisi indignus*
 **Dendroica erithachorides erithachorides*
Compsothlypis pitiayumi elegans
 **Ateleodacnis bicolor*
 **Ateleodacnis leucogenys*
Cæreba luteola luteola
 **Dacnis carebicolor napæa*
Cyanerpes cæruleus cæruleus
Cyanerpes cyaneus
Sturnella magna paralius
 **Leistes militaris*
 **Agelaius icterocephalus icterocephalus*
 **Icterus mesomelas carrikeri*
 **Icterus nigrogularis nigrogularis*
 **Icterus auricapillus*
 **Icterus icterus ridgwayi*
 **Megaquiscalus major assimilis*
 **Molothrus bonariensis cabanisii*
Cassidix oryzivora violæa
 †*Amblycercus holosericeus flavirostris*
 **Cacicus cela*
 **Cacicus vitellinus*
Ostinops decumanus melanterus
 †*Schistochlamys atra atra*
Eucometis cristata cristata
- **Tachyphonus luctuosus panamensis*
 †*Tachyphonus rufus*
Ramphocelus dimidiatus dimidiatus
 **Nemosia pileata hypoleuca*
 †*Piranga testacea faceta*
Thraupis palmarum atripennis
 **Thraupis glaucocolpa*
Thraupis cana cana
 †*Tangara viridissima toddi**
Tanagra crassirostris
 **Tanagra trinitatis*
Saltator striatipictus striatipictus
Saltator maximus
 **Saltator olivascens plumbeus*
 **Saltator orenocensis rufescens*
 **Richmondia phænicea*
 †*Oryzoborus funereus*
Cyanocompsa cyanoides cyanoides
Sporophila gutturalis
 **Sporophila minuta minuta*
 **Sporophila grisea grisea*
 †*Sporophila haplochroma*
 **Tiaris bicolor omissa*
Volatinia jacarini atronitens
 †*Sicalis citrina browni**
 **Sicalis flaveola flaveola*
Arremon schlegeli
 **Arremonops conirostris conirostris*
 **Arremonops tocuyensis*
 **Coryphospingus pileatus brevicaudus*
 †*Emberizoides herbicola sphenerus*

Myospiza humeralis meridana

†*Astragalinus psaltria columbianus*

Altitudinal Range.—In the above enumeration all the species not known to range (in the Santa Marta region) above (approximately) 1,000 feet are preceded by an asterisk, while those not recorded below this limit¹² are designated by a dagger. Species without any sign prefixed have been recorded from both belts, but comparatively few of these have an altitudinal range coextensive with the recognized limits of the Tropical Zone. Some of the forms in this category, however, range upward into the Subtropical Zone and possibly even beyond. Careful collation of the present list with the data obtained for the same species in other parts of Colombia indicates that a considerable number of forms may very possibly go higher or lower than our present information admits; nevertheless, it is obvious that in the Santa Marta region at least two divisions or belts may be recognized more or less plainly in the area covered by the Tropical Zone. These belts depend primarily upon altitude and humidity, and correspond in a general way with the limits of the several kinds of forest already described under the head of Ecological Conditions. Taking into consideration the local distribution of the species of the Tropical Zone, therefore, it has seemed advisable to divide the same into (1) the *Littoral*, or *Lower Tropical*, comprising the coastal plain in general, the basin of the Magdalena, the valley of the Rio Cesar, and the lower reaches of the foothills encircling the mountains, up to an altitude of (more or less) 1,000 feet above sea-level; and (2) the *Piedmont*, or *Upper Tropical*, embracing that part lying above this elevation, extending to the upper limits of the Zone.

The distinctions which we thus recognize are not to be regarded as comparable with the zonal subdivisions known as faunas (using this word in its restricted sense), but rather imply that the Tropical Zone is not *altitudinally homogeneous*. There is considerable evidence (some of which we hope to present in another connection) going to show that such a grouping of species as is here indicated is by no means peculiar to this particular region. Nevertheless, we agree with the latest authority on the subject that no formal division of this zone should be attempted on this basis alone. With this understanding, therefore, we proceed to a fuller consideration of the

¹² Except as stated beyond (page 69).

Littoral, or Lower Tropical.—The Littoral is characterized by the great diversity of habitat within its limits, each of which has its peculiar species of birds. (There are some forms, however, which are present in nearly all situations.) There are the arid plains of the Goajira Peninsula, the semi-arid woodland and scrub of the northwest and south slopes of the mountains, the savannas of the Rio Cesar Valley, the endless lagoons and mangrove swamps around the Cienaga Grande and the delta of the Magdalena, and lastly the humid forest of the Magdalena basin and of the north coast, as fully described under the head of Ecological Conditions. As already explained, this diversity of conditions is due in the main to the topography of the region, differences in the relative humidity, etc. This very diversity of conditions naturally makes for a corresponding diversity in the bird-life.

Beginning in the west, we have the mangrove-lined shores and waterways of the Cienaga Grande and Magdalena delta, inhabited by many species of aquatic birds, some of which are rare or absent elsewhere in this general region. The characteristic land birds, however, are few in number. Among such may be mentioned *Chloroceryle aenea aenea*, *Lepidopygia lilliae*, *Dendroica erithachorides erithachorides*, and *Atelodacnis bicolor*. Most of the water birds on the list have a more or less extended distribution in tropical America, and their presence depends mainly upon suitable habitat and local conditions, not upon zone, so that there would appear to be no sufficient justification for the recognition of a minor faunal area covering their range in these parts.

The lowlands east of the Cienaga Grande, from the lower foothills of the San Lorenzo south for an indeterminate distance, are covered by a humid forest, where many species of birds not elsewhere detected in this general region were secured. Some of the more characteristic forms are: *Amazona ochrocephala panamensis*, *Amazona amazonica amazonica*, *Ara ararauna*, *Coccyzus lansbergi*, *Nonnula frontalis pallescens*, *Picumnus squamulatus*, *Veniliornis kirkii ceciliae*, *Chrysoptilus punctigula ujhelyii*, *'Curucujus' melanurus macrourus*, *Lepidopygia luminosa*, *Damophila juliae juliae*, *Formicarius analis virescens*, *Cercomacra nigricans*, *Myrmopagis melæna melæna*, *Thamnophilus nigriceps*, *Taraba transandana granadensis*, *Pachyrhamphus cinnamomeus magdalenæ*, *Attila idiotes*, *Capsiempis flaveola leucophrys*,

Elania gaimardii macilvainii, *Pheugopedius fasciatoventris fasciatoventris*, *Heleodytes nuchalis*, *Heleodytes curvirostris*, *Ateleodacnis leucogenys*, *Icterus mesomelas carrikeri*, and *Cacicus vitellinus*. Most of the above are forest species, but there are considerable areas of marshy ground in this section also, yielding such forms as *Ixobrychus erythromelas*, *Phimosus berlepschi*, *Creciscus albigularis*, *Belonopterus cayennensis cayennensis*, *Leptoxyla cinnamomea fuscifrons*, *Arundinicola leucocephala*, and *Agelaius icterocephalus icterocephalus*.

The coast region in the immediate vicinity of Santa Marta, comprising the northwest corner of the general region, east as far at least as Cape San Juan de Guia, is semi-arid in character, and constitutes still another ecological area. This section has been more thoroughly studied than any other part, and its avifauna is consequently better known. Aside from a number of aquatic and raptorial species there appear to be very few forms actually confined (so far as the Santa Marta region is concerned) to this section, or at least unrecorded elsewhere. They are as follows: *Crypturornis idoneus*, *Eupsychortyx leucopogon littoralis*, *Crotophaga sulcirostris*, *Coccyzus melacoryphus*, *Steatornis caripensis*, and *Setopagis parvula heterura*. Very possibly, when more is known about these particular forms, they will for the most part be found to have a wider local range. The avifauna in general is what might be expected to occur in a region which partakes of both arid and humid characters: it is an obvious mixture of both types. Many of the most characteristic forms of the Arid Tropical, as represented in Venezuela, however, are conspicuous by their absence, while some of the birds of the Humid Tropical are still able to maintain themselves under the drier conditions. The resulting assemblage of species, partaking as it does of both elements, is unique for the Santa Marta region, if not also for the whole northern coast of Colombia. The fauna of the littoral has a tendency in this part to ascend into the foothills, following the ridges to beyond the usual limit of 1,000 feet.

Passing by for the moment the humid northern littoral, we come to the arid plains of the Goajira Peninsula, which begin near the town of Camarones on the north coast, and extend eastward into Venezuela, with an arm reaching down to the southwest in the valleys of the Rio Rancheria and Rio Cesar. Here we get such characteristic forms of the Arid Tropical Zone as *Eupsychortyx cristatus cristatus*,

Chamaepelia passerina albivitta, *Scardafella squammata ridgwayi*, *Psittacula passerina cyanophanes*, *Eupsittula pertinax æruginosa*, *Chlorostilbon caribæus*, *Leucippus fallax fallax*, *Pacilurus candei venezuelensis*, *Synallaxis albescent perpalida*, *Pyrocephalus rubinus saturatus*, *Phæomyias murina incomta*, *Mimus gilvus columbianus*, *Polioptila plumbeiceps*, *Helcodytes minor albicilius*, *Cyclarhis flavipectus canticus*, *Icterus icterus ridgwayi*, *Saltator orenocensis rufescens*, *Richmondia phænicea*, *Tiaris bicolor omissa*, *Sicalis flaveola flaveola*, *Arremonops tocuyensis*, and *Coryphospingus pileatus brevicaudus*, with numerous others of more general distribution. Water birds for the most part are conspicuous by their absence, while only ten species of all kinds are common to both this region and the Ciénaga Grande section.

Piedmont, or Upper Tropical.—The Piedmont belt may be said to occupy that part of the Tropical Zone lying above a mean altitude of 1,000 feet, at least under normal conditions. There are circumstances under which its upper limit may drop lower, as when it follows the course of a stream down from the hills. It has been studied mainly in the San Lorenzo district, and in the northern foothills of the Sierra Nevada proper. In this latter part, by reason of the greater humidity and consequent lower temperature, as already explained, all the zones have moved downward more or less, so that the Piedmont belt practically overlaps the Littoral, and the Subtropical Zone occupies the place of the former to a large extent. The Piedmont belt contains few species of its own, but is rather characterized by the forms which it lacks as compared with the Littoral.¹³ The number of species which occur within its limits is thus decidedly smaller than in the Littoral, and there is a gradual diminution with the increasing altitude. Species of both arid and humid predilections are included, with many which are common to both.

In this connection it may be well to consider the fauna of the humid forest of the north coast, which is completely cut off by many

¹³ Unquestionably some of the forms in the list of Tropical Zone species are incorrectly allocated in this respect. For instance, Mr. Smith sent in a great many birds labelled "Bonda" which the junior author never met with so low down, and which it is all but certain were not collected in that immediate vicinity. For this reason considerable allowance must be made for the list as it stands, based as it is on data from all sources indiscriminately. In a few cases, however, these "Bonda" records have been disregarded.

miles of arid and semi-arid country on both ends. As a result of this isolation we find that this area, although in fact more humid in character than the forest section east of the Ciénaga Grande, has fewer typical representatives of the Humid Tropical than the other. In order to bring out this difference more clearly, the following figures, based on a careful tabulation of the species recorded at Fundación and Tucurín on the one hand, and at Don Diego and Dibulla on the other, are presented herewith:

Number of species listed.....	220
Fundación and Tucurín.....	167
Don Diego and Dibulla.....	134
Common to both regions.....	82
Representative forms in each region.....	2

It appears, therefore, that out of 167 species observed in the region of Fundación only half extend to the humid region of the north coast, while only about forty per cent of the avifauna of the latter reach the other—a circumstance which is significant indeed. On the other hand, there are a number of forms which, although normally confined to the Piedmont belt, habitually drop down to sea-level in this north coast region, such as *Oreopeleia violacea albiventer*, *Phaethornis striigularis striigularis*, *Pipra erythrocephala erythrocephala*, *Tyranniscus chrysops minimus*, *Hapalocercus meloryphus*, and *Microcerculus squamulatus corrasus*.

Faunal Affinities.—With this review of the local distribution we are now ready to discuss the larger question of the origin and relationships of the fauna of the Tropical Zone of the Santa Marta region as a whole. Obviously it is a composite fauna, made up of two different elements, mingled in varying proportions. Only towards the east, in the arid plains of the Goajira Peninsula, and including also the upper Rio Rancheria-Rio Cesar Valley, where the conditions are known to be very similar, is there a practically homogeneous fauna. Here we get the following forms, all of which, except those marked with an asterisk, are otherwise confined to Venezuela:

<i>Eupsychortyx cristatus cristatus</i>	* <i>Hypnelus ruficollis decolor</i>
* <i>Ortalis ruficrissa</i>	<i>Chlorostilbon caribaeus</i>
* <i>Psittacula passerina cyanophanes</i>	<i>Leucippus fallax fallax</i>
<i>Thectocercus haemorrhous neox-</i>	<i>Pacilurus candei venezuelensis</i>
<i>emus</i>	* <i>Synallaxis albescens perpallida</i>

<i>Furnarius leucopus agnatus</i>	<i>Richmondena phænicea</i>
<i>Pyrocephalus rubinus saturatus</i>	<i>Arremonops tocuyensis</i>
<i>Icterus icterus ridgwayi</i>	<i>Coryphospingus pileatus brevicaudus</i>
<i>Saltator orenocensis rufescens</i>	

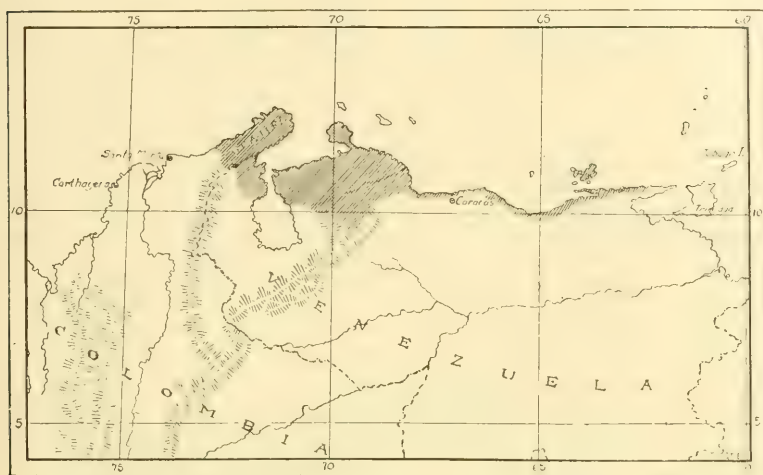


FIG. 1. Range of *Richmondena phænicea*, a characteristic species of the Arid Tropical Zone of Venezuela, but which does not pass beyond the Goajira region in Colombia.

None of these forms are known to range beyond the aforesaid limits in the present region: they are all strictly arid in their distribution, entering our region from the east, and not going very far. (Compare Figure 1.) But there is another and larger class of species, just as clearly Arid Tropical in their affinities, which have penetrated farther—some of them much farther—to the west. These are as follows:

<i>Geranospiza carulescens</i>	<i>Thermochalcis cayennensis albicauda</i>
<i>Pagolla wilsonia crassirostris</i>	<i>Hypnelus ruficollis ruficollis</i>
<i>Leptotila verreauxi verreauxi</i>	<i>Galbula ruficauda pallens</i>
<i>Chamaepelia passerina albivitta</i>	<i>Picumnus cinnamomeus cinnamomeus</i>
<i>Scardafella squammata ridgwayi</i>	<i>Leptoxyrura cinnamomea fuscifrons</i>
<i>Crossophthalmus gymnophthalmos</i>	<i>Furnarius leucopus exilis</i>
<i>Brotogeris jugularis jugularis</i>	
<i>Eupsittula pertinax æruginosa</i>	
<i>Otus choliba margaritæ</i>	

<i>Microrhopias intermedia</i>	<i>Polioptila plumbeiceps</i>
<i>Sakesphorus pulchellus</i>	<i>Heleodytes minor albicilius</i>
<i>Myiarchus tyrannulus tyrannulus</i>	<i>Pachysylvia aurantiifrons auran-</i>
<i>Elania gaimardii bogotensis</i>	<i>tiiifrons</i>
<i>Phæomyias tenuirostris</i>	<i>Careba luteola luteola</i>
<i>Euscarthmus impiger</i>	<i>Cacicus cela</i>
<i>Mimus gilvus columbianus</i>	<i>Thraupis glaucocolpa</i>

Some of the above we know do not range westward beyond the semi-arid region of the northeast coast, as for instance *Microrhopias intermedia*, which is replaced in the lower Magdalena Valley by a distinct species, *Microrhopias alticincta honda*; *Cacicus cela*, which is similarly replaced by *Cacicus vitellinus*; and *Elania gaimardii bogotensis*, replaced by *Elania gaimardii macilvainii*. (See Figure 2.)

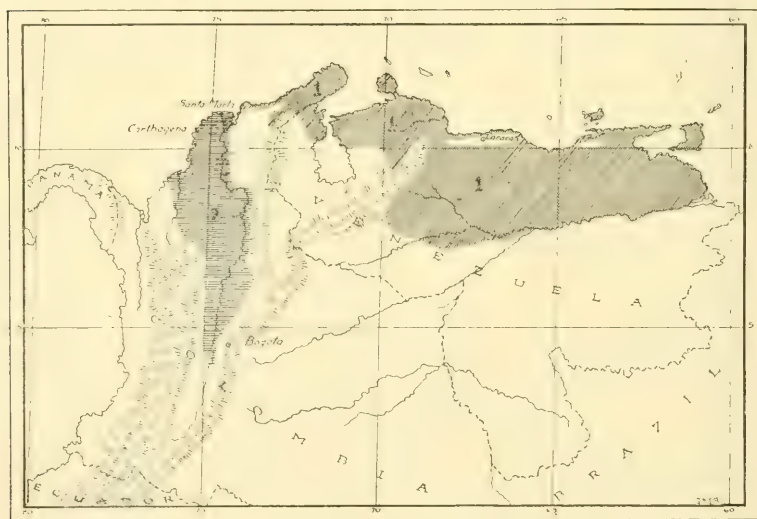


FIG. 2. Range of *Microrhopias intermedia* (1), a species of the Arid Tropical Zone which enters the Santa Marta Region from the east, but is replaced in the Magdalena Valley by an allied form, *M. alticincta honda* (2).

The presumption is strong, therefore, that the species in this list have reached their present range in the littoral of Colombia by extending their range westward along the coast, some having gone farther than others. At any rate, few of these forms are yet known from the

valley of the Rio Cesar, and none from far up the Magdalena. We must assume, therefore, either that they have been able to cross the long stretch of humid forest country on the north coast, whereas the species on the first list have not been able to do so, or else that these conditions were not always present. But why, in the latter event, should not *all* of the Arid Tropical forms have passed over, supposing for the moment that they were able to adapt themselves to a semi-arid habitat?

Evidence is not wanting, however, to indicate that some of the Arid Tropical forms have entered this region from the west and south. There is reason to believe, for example, that *Eupsychortyx leucopogon leucotis* is the parent form of *E. leucopogon decoratus*, and this in turn of *E. leucopogon littoralis*, which latter has a very restricted range, occupying the semi-arid region of the northeast coast, and is replaced in the Goajira Peninsula by a distinct species, *E. cristatus cristatus*. This happens to be the only case in which a peculiar form has been developed in the Santa Marta region from an antecedent inhabiting the lower Magdalena Valley, but there are several other very suggestive cases in the category under consideration. *Ortalis garrula*, *Psittacula spengeli*, and *Chlorostilbon haberlinii*, all of which are replaced by a distinct species on the northeast coast, seem to have entered from this direction, and doubtless others also, which are not thus replaced.

In the case of by far the larger number of semi-arid forms, however, we are not now able to say just where they entered the Santa Marta region. The Rio Cesar Valley is known to be Arid Tropical, at least for its upper part, and may have formerly sufficed to carry this zone into the lower Magdalena Valley, whence its fauna may have reached our region from the west or south. Unfortunately our knowledge of this particular region is imperfect, but while it is most unlikely that the Arid Tropical connection here is unbroken, as said by Dr. Chapman, it may very well be that some at least of the forms having such affinities have reached the northwest coast region indirectly by this route, under different climatic conditions.

We now come to a large class of species which are clearly Humid Tropical in their faunal affinities. These occupy the forest regions to the east of the Cienaga Grande and on the north coast respectively, as already shown, although some of them are able to exist also in

the semi-arid northwest section around Santa Marta, often side by side with forms of more arid habitat. Not only are these two respective areas of humid forest separated from each other, but also, if the physical and faunal characters of the Rio Cesar Valley were as Dr. Chapman has supposed, they would be isolated from the main Humid Tropical of Colombia by the interposition of many miles of arid country. In the list which follows are included only such forms as are not known to range into Venezuela, and whose Colombian origin, so far as the Santa Marta region is concerned, is therefore undoubted.¹⁴

<i>Tigrisoma salmoni</i>	<i>Dendrocincla lafresnayei lafres-</i>
<i>Crax alberti</i>	<i>nayei</i>
<i>Neocrex colombianus</i>	<i>Formicarius analis virescens</i>
<i>Creciscus albigularis</i>	<i>Cercomacra nigricans</i>
<i>Jacana nigra</i>	<i>Ramphocœnus rufiventris sanctæ-</i>
<i>Amazona ochrocephala panamen-</i>	<i>marthæ</i>
<i>sis</i>	<i>Myrmopagis melæna melæna</i>
<i>Ara militaris</i>	<i>Thamnophilus nigriceps</i>
<i>Coccyzua rutila gracilis</i>	<i>Attila idiotes</i>
<i>Notarchus hyperrhynchus</i>	<i>Myiarchus ferox panamensis</i>
subsp.	<i>Pipromorpha oleaginea parca</i>
<i>Veniliornis kirkii cecilii</i>	<i>Myiozetetes cayanensis hellmayri</i>
<i>Scapanus melanoleucus malher-</i>	<i>Elania viridicata pallens</i>
<i>bii</i>	<i>Platytriccus albogularis neglectus</i>
<i>Chloronerpes chrysochloros auro-</i>	<i>Todirostrum nigriceps</i>
<i>sus</i>	<i>Oncostoma olivaceum</i>
<i>Chrysotrogon caligatus columbi-</i>	<i>Onychorhynchus mexicanus fra-</i>
<i>anus</i>	<i>terculus</i>
<i>Lepidopyga lillia</i>	<i>Thryophilus leucotis leucotis</i>
<i>Damophila julia julia</i>	<i>Pheugopedius fasciatoventris fas-</i>
<i>Phaethornis longirostris susurrus</i>	<i>ciatoventris</i>

¹⁴ It must be clearly understood that these lists of Tropical Zone forms are only partial and provisional, and intended to be suggestive rather than final. With the exact faunal affinities of so many species still more or less uncertain, it has been thought best to restrict the lists to some of the characteristic forms in each category, since these will serve our purpose to indicate the origin of the fauna as a whole. Too much dependence, it may be remarked in passing, should not be placed on Dr. Chapman's faunal lists as a basis for comparison, since his work in the Caribbean Fauna is admittedly incomplete.

<i>Helcodytes curvirostris</i>	<i>Ramphocelus dimidiatus dimidia-</i>
<i>Cyanocorax affinis affinis</i>	<i>tus</i>
<i>Icterus mesomelas carrikeri</i>	<i>Oryzoborus funereus</i>
<i>Cacicus vitellinus</i>	

Although it is a fact that the north coast region of humid forest is apparently better adapted to these and other forms of similar tastes than is the region east of the Cienaga Grande, we find that a considerable percentage of such forms apparently do not enter it, being confined to the latter region. Even making due allowance for the possibility of certain species having been overlooked in one region or the other, the discrepancy is striking, and in our opinion signifies that these forms of the Humid Tropical must have entered this region *from the south*, since not all of them have been able to complete their distribution by passing the intervening semi-arid strip and occupying the area of suitable habitat on the north coast. Turning now to Dr. Chapman's list of Tropical Zone species which enter the Humid Cauca-Magdalena Fauna from the east, we find that of seventy-six species which he gives no less than *fifty-six* reach the Santa Marta region either unchanged or as slightly modified forms. On the other hand, of the fifty-nine species which he gives as entering the Humid Cauca-Magdalena Fauna from the west, only five are known from the Santa Marta region. This in itself is a striking confirmation of the theory that the tide of Tropical Zone life which flowed into this region came originally from the east, around the head of the Eastern Andes. Unfortunately our knowledge of this latter region is exceedingly scanty, as Dr. Chapman remarks.¹⁵ Sievers, however, reports that the forest in the Sierra Perija and Sierra Negra (local names for parts of the Eastern Andes opposite the Santa Marta region) generally begins at about 1,200 to 1,400 meters (4,000-4,600 feet), although at Manaure it is down to 1,100 meters (3,600 feet). At this height woods appear everywhere on the whole range, forming a dark green crown as seen from a distance. Between 1,600 and 2,500 meters (5,250-8,200 feet) these woods are very dense (*i.e.*, they are Subtropical Zone). We

¹⁵ This is largely owing to the circumstance that it is inhabited by the Motilone Indians, a savage tribe who permit no intruders into their domain, and whom not even the Colombian Government has been able to subdue. The region has been recently entered, however, from the Venezuelan side (compare De Booy, *Geographical Review*, 1918, pp. 385 *et seq.*).

can be fairly sure, therefore, that there is at least a narrow strip of Humid Tropical Zone forest extending around the northern end of the Eastern Andes, as suspected by Dr. Chapman, which would probably suffice to carry the forms of this zone in from the east. We have no certain knowledge of the birds of this narrow strip, however, beyond a list of seventeen species given for Manaure by Simons, some of which may have come from the forest zone.¹⁶

Of the twenty-four species given by Dr. Chapman as characterizing the Humid Cauca-Magdalena Fauna (*i.e.*, not found elsewhere) no less than nine have penetrated to the Santa Marta region. (These are in addition to the forms already specified as having entered this Fauna from either side.) (See Figure 3.) As recently ascertained by the junior author, there is every indication of a direct connection existing between the humid forest areas of the Santa Marta region on the one hand and those of the middle Magdalena and the western slope of the Eastern Andes on the other, which would of course readily account for the intrusion of so many characteristic and semi-characteristic Humid Cauca-Magdalena forms in the Santa Marta region. Such a connection would of course destroy the continuity of the Arid Tropical, and would oblige us to suppose either that certain forms of that zone had in fact been able to cross the intervening unsuitable humid belt to establish themselves in the available areas beyond, or else that their dispersion was effected prior to the change in conditions which permitted the Humid Tropical forms to enter. We are inclined to favor the latter view, while at the same time admitting that unsuitable habitat may not necessarily be an absolute barrier against the dispersal of species in the Tropical Zone. This is probably particularly true in the case of birds, which are able to traverse great distances with such comparative ease. The evidence derived from a study of the present distribution of the forms of the Tropical Zone in the Santa Marta region goes to show that the Arid Tropical Venezuelan

¹⁶ The species represented are as follows: *Ictinia plumbea*, *Falco sparverius isabellinus*, *Pteroglossus torquatus nuchalis*, *Ramphastos ambiguus abbreviatus*, *Ramphastos piscivorus brevicarinatus*, *Chlorostilbon russatus*, *Chalybura buffonii aneicauda*, *Sittasomus sylvioides levis?*, *Dendrocincla lafresnayei lafresnayei*, *Chiroxiphia lanceolata*, *Muscivora tyrannus*, *Myiodynastes maculatus maculatus*, *Onychorhynchus mexicanus fraterculus*, *Tersina viridis occidentalis*, *Basileuterus delatirii mesochrysus*, *Cyanerpes cyaneus*, and *Cassidix oryzivora viola*.

element was probably the first to enter, and came in from the east, followed in due course by the Colombian element from the south, while the Humid Tropical forms are a later infusion, and all came in from the south, extending their range from the middle Magdalena to reach

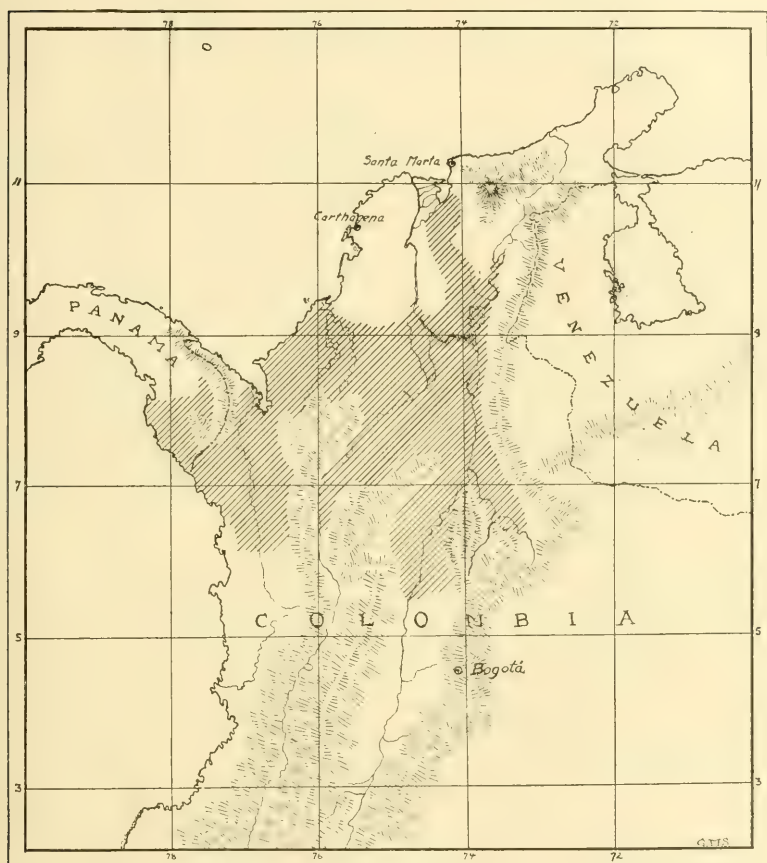


FIG. 3. Range of *Thamnophilus nigriceps*, a species of the Humid Cauca-Magdalena Fauna which reaches the Santa Marta Region from the south.

the forest country which was gradually being formed as the land raised to the east of the Cienaga Grande. From here some of them have crossed over to the humid forest area on the north coast.

There are several cases, some of which we have already noticed, where a species or group is represented in different sections of our region by different forms. We bring these together here in tabular form.

West Coast.	North Coast.
	(Including upper Rio Cesar Valley.)
<i>Eupsychortyx leucopogon littoralis</i> <i>Eupsychortyx leucopogon decoratus</i>	<i>Eupsychortyx cristatus cristatus</i>
<i>Ortalis garrula</i> <i>Psittacula spengeli</i> <i>Hypnelus ruficollis ruficollis</i> <i>Chlorostilbon haeblerinii</i> <i>Pacilurus candei candei</i> <i>Furnarius leucopus exilis</i> <i>Elania gaimardii macilvainii</i> <i>Polioptila bilineata bilineata</i> <i>Thryophilus leucotis leucotis</i>	<i>Ortalis ruficrissa</i> <i>Psittacula passerina cyanophanes</i> <i>Hypnelus ruficollis decolor</i> <i>Chlorostilbon caribaeus</i> <i>Pacilurus candei venezuelensis</i> <i>Furnarius leucopus agnatus</i> <i>Elania gaimardii bogotensis</i> <i>Polioptila plumbeiceps</i> <i>Thryophilus albipectus venezuelanus</i>
<i>Cacicus vitellinus</i>	<i>Cacicus cela</i>

No less than seventeen species and subspecies are supposed to be confined to the Tropical Zone of the Santa Marta region, as here defined. They are as follows:

<i>Rupornis magnirostris insidiatrix</i> <i>Crypturornis idoneus</i> <i>Eupsychortyx cristatus littoralis</i> <i>Ortalis ruficrissa</i> <i>Crax annulata</i> <i>Psittacula passerina cyanophanes</i> <i>Sceloporus parvulus heterura</i> <i>Hypnelus ruficollis decolor</i> <i>Lepidopygia lilliae</i>	<i>Phaethornis longirostris susurrus</i> <i>Synallaxis albescens perpallida</i> <i>Attila parvirostris</i> <i>Attila idiotes</i> <i>Microcerculus squamulatus corrasus</i> <i>Pheugopedius latus</i> <i>Basileuterus cabanisi indignus</i> <i>Tangara viridissima toddi</i>
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Some of these, however, almost certainly have a wider range than is here indicated. Of the more common forms actually known to be

confined to the region *Phaethornis longirostris susurrus*, *Attila parvirostris*, and *Pheugopedius latus* are perhaps the most isolated from their congeners, and when more is known of certain other forms on

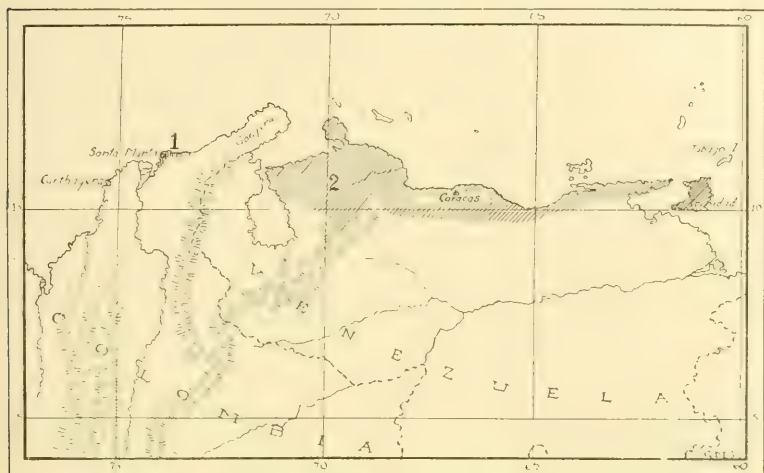


FIG. 4. Range of *Pheugopedius latus* (1), a species peculiar to the Santa Marta Region, and of its probable antecedent, *P. rutilus* (2).

the list they may likewise prove to be actually as well as apparently isolated. (See Figures 4 and 5.) In nearly every case the derivation of these peculiar forms is evident, and will be considered more in detail beyond, under the head of the several species in question.

While we are discussing the peculiarities of the Santa Marta Tropical Zone fauna it may be well to call attention to its *lacunæ*, which are fully as marked as its positive characteristics. It is of course possible that further intensive field-work will close some of these *lacunæ*, but on the other hand it is not conceivable that the apparent absence of so many genera and superspecific groups from the region is not without significance. Not to go beyond such forms as are known to have a comparatively extensive range in the Tropical Zone, occurring on both sides of the Santa Marta region, it is difficult to account for the apparent absence in the latter of any representative of the Columbine genus *Zenaida*, of such well-known and widely distributed aquatic forms as *Gallinula*, *Heliornis*, *Colymbus*, *Podilymbus*, *Ryn-*

chops, *Hoploxypterus*, *Eurypyga*, *Plegadis*, *Harpiprion*, *Jabiru*, *Herodias*, *Chauna*, *Nomonyx*, and *Fregata*, or of birds of prey such as *Parabuteo*, *Leucopternis*, *Thrasaëtos*, *Spiziastur*, *Elanus*, *Bubo*, *Speotyto*, and *Tyto*. Among "Picarian" forms *Capito*, *Jacamerops*, *Momasa*, and *Celeus* are conspicuous by their absence, and among Passerine birds such well-known genera as *Hylophylax*, *Sittasomus*, *Placostomus*, *Myiobius*, *Querula*, *Geothlypis*, *Pitylus*, *Chlorophanes*, "*Phænico-*



FIG. 5. Range of *Phaethornis longirostris susurrus* (1), a characteristic form of the Humid Tropical Zone of the Santa Marta Region, and of its nearest ally, *P. longirostris cephalus* (2), to show their discontinuous distribution.

thraupis," and *Hemithraupis*. It is not probable that the absence of these forms, and of others which could readily be named, is merely accidental. If any conclusion may be drawn from such negative evidence, it must be that many species have failed to reach the Santa Marta region, or failed to maintain themselves there because of the conditions which obtain, and that the fauna is in reality *semi-insular* and *depauperate*, despite its diversity in character.

The inclusion of the lowlands of the Santa Marta region within the limits of the Caribbean Fauna, as the latter is characterized by Dr. Chapman in his recent work, is not open to criticism so far as its arid and semi-arid parts are concerned. Whether there are sufficient grounds for a formal subdivision of the Caribbean Fauna into an eastern, or Venezuelan, and western, or Colombian, section, is an open question, to the consideration of which the writer hopes to return at some future time, with more data in hand. It is certain that the Caribbean Fauna as it now stands is heterogeneous, and that in the event of its subdivision it would be necessary to recognize the Santa Marta region as a distinct and coördinate faunal area, partaking as it does of the nature of both extremes as well as possessing marked characteristics of its own.

THE SUBTROPICAL ZONE.

Character and Extent.—Ascending above the Tropical we enter a zone entirely different in its physical aspects as well as in its fauna and flora. This has been called by Dr. Chapman the Subtropical or "Cloud" Zone, the vernacular name from the circumstance that its lower limit coincides with the level of the clouds. As already said, this level is at an average elevation of about 4,500 feet (more in some cases) except on the north slope of the main Sierra Nevada, where it descends as low as 2,000 feet. The Subtropical is primarily a zone of humid forest, and its life is accordingly much more uniform in character (from a faunal standpoint) than the life of the Tropical. Wherever there are areas of savanna or open shrubbery within the limits normally occupied by this zone, the birds inhabiting such areas will invariably be found to be species of either the Piedmont belt of the Tropical Zone, which have ascended from below, or else those of the Temperate Zone, which have followed their natural environment downwards. This is well illustrated at San Sebastian, which is situ-

ated on the south slope of the Sierra Nevada at an elevation of 6,700 feet, and therefore well within the normal altitudinal limits of the Subtropical Zone. Much of the surrounding country is open, grassy plains, and here we find a Meadowlark, *Sturnella magna paralius*, which is elsewhere unknown except at much lower altitudes in Colombia and Venezuela. In the scrub growth are also found such characteristic Tropical Zone forms as *Piaya columbiana*, *Saucerottia saucerottii warszewiczi*, *Antrostomus rufus rufus*, *Sayornis latirostris fumigatus*, *Tyrannus melancholicus chloronotus*, *Muscivora tyrannus*, and *Mimus gilvus melanopterus*, together with Temperate Zone forms such as *Orodynastes striaticollis striaticollis*, *Semimerula cacozela*, *Brachyspiza capensis peruviana*, and *Spinus spinescens capitaneus*. Subtropical Zone forms occur here also, but are confined to their appropriate habitat. Hence we infer that the Tropical and Temperate Zone forms are here a recent infusion, brought in by local conditions.

The general character of the vegetation of the Subtropical Zone has already been fully described under Ecological Conditions. It has been traced across the northern and western flanks of the mountain system of this region as a continuous belt, but we do not know whether or not it keeps on around the southern and eastern slopes without interruption, since these sections have not been so thoroughly investigated. What information we have on the distribution of forests in these parts would lead us to believe that the Subtropical Zone is here discontinuous, perhaps as a result of deforestation in recent times. Although a few Subtropical forms habitually drop down into the Piedmont belt of the Tropical, the boundary between the two zones is sufficiently well defined by the cloud-level. On the north slope of the Sierra Nevada, however, due undoubtedly to the unusually low (and possibly variable) altitude of atmospheric condensation (2,000 feet), numerous Tropical Zone forms range above this level, and there is more or less overlapping of the two zones—a very unusual condition. When we come to determine the upper limit of the Subtropical Zone in this same region, we find a similar and even more marked overlapping between this zone on the one hand and the Temperate on the other. Few typical Subtropical Zone birds are known to range above 9,000 feet in this region, and some do not go above 6,500 feet, while several characteristic species of the Temperate Zone, on the other hand, are known to drop down as low as 5,000 feet. On the San Lorenzo,

as well as on the south slope of the Sierra Nevada (so far as known), where conditions are more normal, the Subtropical Zone appears to occupy the belt lying between about 4,500 feet and 8,000 or 8,500 feet. On the whole, we would place the upper limit of this zone in the Santa Marta region at 8,500 or 9,000 feet, or a little lower than the figures given by Dr. Chapman for the Andean system in Colombia.

Such Subtropical Zone forms as descend into the Tropical Zone are indicated by an asterisk in the subjoined list, while those which are accustomed to range upward into the Temperate Zone are similarly indicated by a dagger.

Birds of the Subtropical Zone.

<i>Accipiter salvini</i>	† <i>Campylopterus phainopeplus</i>
<i>Pernohierax leucorrhous</i>	<i>Thripobrotus lacrymiger sanctæ-</i>
<i>Micrastur zonothorax</i>	<i>marthæ</i>
<i>Odontophorus atrifrons</i>	<i>Xiphocolaptes procerus fortis</i>
<i>Chamaepetes sanctæ-marthæ</i>	<i>Dendrocolaptes validus seilerni</i>
* <i>Penelope colombiana</i>	<i>Thripadectes flammulatus</i>
<i>Oreocheila linearis infusca</i>	* <i>Automolus rufipectus</i>
† <i>Chlorænas albilinea albilinea</i>	<i>Xenicopsis montanus anxius</i>
* <i>Pionus sordidus saturatus</i>	<i>Synallaxis fuscocorufa</i>
<i>Pyrrhura viridicata</i>	<i>Acrorchilus hellmayri</i>
<i>Otus choliba</i> subsp.	<i>Premnoplex brunescens colora-</i>
<i>Malacoptila mystacalis</i>	<i>tus</i>
<i>Aulacorhynchus lautus</i>	<i>Xenops rutilus heterurus</i>
<i>Aulacorhynchus calorhynchus</i>	<i>Sclerurus albigularis propinquus</i>
<i>Veniliornis olcaginus exsul</i>	<i>Grallaria regulus carmelita</i>
<i>Chloronerpes rubiginosus alleni</i>	<i>Grallaria bangsi</i>
<i>Trogonurus personatus personatus</i>	* <i>Grallaricula ferrugincipectus</i>
<i>Pharomachrus festatus</i>	* <i>Drymophila caudata hellmayri</i>
<i>Simonula floriceps</i>	<i>Myrmopagis schisticolor sanctæ-</i>
* <i>Chatocercus astræans</i>	<i>marthæ</i>
† <i>Lafresnaya lafresnayi liriopæ</i>	<i>Dysithamnus olivaceus</i>
† <i>Helianthea phalerata</i>	<i>Scytalopus sanctæ-marthæ</i>
* <i>Thalurania colombica colombica</i>	<i>Attila rufipectus rufipectus</i>
* <i>Colibri cyanotus cyanotus</i>	<i>Euchloris aureopectus decora</i>
† <i>Colibri iolotus brevipennis</i>	<i>Myiodynastes chrysoccephalus in-</i>
	<i>termedius</i>

*† <i>Pyrrhomys vicillotioides assimilis</i>	<i>Myioborus verticalis</i>
* <i>Elania pudica pudica</i>	<i>Diglossa albilateralis</i>
<i>Tyranniscus nigrocapillus flavimentum</i>	<i>Diglossa sittoides similis</i>
<i>Tyranniscus improbus</i>	<i>Sporathraupis cyanocephala margaritæ</i>
<i>Serpophaga cinerea cana</i>	<i>Tangara heinei</i>
<i>Euscarthmus granadensis</i>	* <i>Tangara cyanoptera</i>
† <i>Othæca diadema jesupi</i>	† <i>Pacilothraupis melanogenys</i>
* <i>Turdus olivater sanctæ-martæ</i>	<i>Chlorophonia frontalis psittacina</i>
<i>Catharus fuscater sanctæ-martæ</i>	<i>Pheucticus laubmanni</i>
* <i>Henicorhina hilaris bangsi</i>	<i>Sporophila luctuosa</i>
<i>Cistothorus alticola</i>	<i>Buarremon basilicus</i>
<i>Vireosylva josephæ mirandæ</i>	<i>Atlapetes melanocephalus</i>
† <i>Pygochelidon cyanoleuca</i>	<i>Catamblyrhynchus diadema</i>
* <i>Basileuterus conspicillatus</i>	
† <i>Myioborus flavivertex</i>	

Faunal Affinities.—The first thing that strikes one after an examination of this list is the comparatively small number of species represented—only seventy-five in all. In order to test the truth of this impression we have gone to considerable pains to compile a list of the Subtropical Zone forms of the Eastern Andes of Colombia, based mainly on the data given by Dr. Chapman in his recent paper, with corrections and additions from the (unpublished) work of the junior author. We find that the list totals one hundred and ninety-five forms, or considerably more than twice as many as have been found in the Santa Marta region. Again, we find that the number of Subtropical forms is not only actually, but also relatively smaller in the Santa Marta region than in the Andes of Colombia. It appears that in the latter section, considered as a whole, these constitute 25 per cent of the total resident avifauna, and are 40 per cent less numerous than the Tropical forms, while in the Santa Marta region they are only 17 per cent of the total resident avifauna, and 22 per cent as numerous as the Tropical forms. In other words, if the Santa Marta region had as many Subtropical forms in proportion to Tropical as the Colombian Andes, it would possess one hundred and thirty-five instead of only seventy-five forms. These facts in themselves signify the semi-insular

character of the Subtropical Zone of this region, and tend to bear out the indications afforded by a study of the fauna of the Tropical Zone. Unfortunately our knowledge of the Subtropical Zone of Venezuela is far from satisfactory, but there is every reason to believe that a numerical comparison here would show a somewhat similar result. In order to reach an understanding of the origin and relationships of the Subtropical Zone fauna of the Santa Marta region, however, it will be instructive to compare it directly with the same zone as represented in neighboring sections. It will be convenient to present these data in tabular form.

Table showing Representative Distribution of Subtropical Zone Forms.

Group	Eastern Andes.	Sierra Nevada.	Venezuelan Andes.
<i>Accipiter</i>	<i>salvini</i>	<i>salvini</i>	<i>salvini</i>
<i>Pernohierax</i>	<i>leucorrhous</i>	<i>leucorrhous</i>	<i>leucorrhous</i>
<i>Micrastur</i>	sp.	<i>zonothorax</i>	<i>zonothorax</i>
<i>Odontophorus</i>	<i>variegatus</i>	<i>atrifrons</i>	
<i>Chamaepetes</i>	<i>goudotii</i>	<i>sancta-martae</i>	
<i>Penelope</i>	<i>argyrotis</i>	<i>colombiana</i>	<i>argyrotis</i>
<i>Oreopeleia linearis</i>	<i>linearis</i>	<i>infusca</i>	<i>linearis</i>
<i>Chloranias albilinea</i>	<i>albilinea</i>	<i>albilinea</i>	<i>albilinea</i>
<i>Pionus sordidus</i>		<i>saturatus</i>	<i>sordidus</i>
<i>Pyrrhura</i>		<i>viridicata</i>	
<i>Otus choliba</i>	(?)	subsp.	(?)
<i>Malacoptila</i>	<i>mystacalis</i>	<i>mystacalis</i>	<i>mystacalis</i>
<i>Aulacorhynchus</i>	<i>albivitta</i>	<i>lautus</i>	<i>albivitta</i>
<i>Aulacorhynchus</i>		<i>calorhynchus</i>	<i>calorhynchus</i>
<i>Veniliornis oleagineus</i>	<i>fumigatus</i>	<i>exsul</i>	<i>reichenbachii</i>
<i>Chloronerpes rubiginosus</i>	<i>meridensis</i>	<i>alleni</i>	<i>meridensis</i> (!)
<i>Trogonurus personatus</i>	<i>personatus</i>	<i>personatus</i>	<i>personatus</i>
<i>Pharomachrus</i>		<i>festatus</i>	<i>festatus</i>
<i>Simonula</i>	¹	<i>floriceps</i>	
<i>Chatocercus</i>	<i>heliador</i>	<i>astreans</i>	<i>rosa</i>
<i>Lafresnaya lafresnayi</i>	<i>lafresnayi</i>	<i>liriope</i>	<i>liriope</i> (?)
<i>Helianthea</i>		<i>phalerata</i>	
<i>Thalurania colombica</i>	<i>colombica</i>	<i>colombica</i>	<i>colombica</i>
<i>Colibri cyanotus</i>	<i>cyanotus</i>	<i>cyanotus</i>	<i>cyanotus</i>
<i>Colibri iolotus</i>	<i>brevipennis</i>	<i>brevipennis</i>	<i>brevipennis</i>
<i>Campylopterus</i>	<i>falcatus</i>	<i>phainopeplus</i>	<i>falcatus</i>
<i>Thripobrotus lacrymiger</i>	<i>lacrymiger</i>	<i>sancta-martae</i>	<i>lafresnayi</i>
<i>Xiphocolaptes procerus</i>		<i>fortis</i>	<i>procerus</i>

¹ A form is known from the Central Andes.

<i>Dendrocolaptes validus</i>	<i>multistrigatus</i>	<i>seilerni</i>	<i>seilerni</i>
<i>Thripadectes</i>	³	<i>flammulatus</i>	<i>flammulatus</i>
<i>Automolus</i>		<i>rufipectus</i>	
<i>Xenicopsis montanus</i>	<i>striaticollis</i>	<i>anxius</i>	<i>venezuelanus</i>
<i>Synallaxis</i>	<i>unirufa unirufa fuscirufa</i>		<i>unirufa meri- dana</i>
<i>Acroorchilus</i>	<i>antisimensis</i>	<i>hellmayri</i>	<i>subcristatus</i>
<i>Premnoplex brunescens</i> ...	<i>brunescens</i>	<i>coloratus</i>	<i>coloratus</i>
<i>Xenops rutilus</i>	<i>heterurus</i>	<i>heterurus</i>	<i>heterurus</i>
<i>Sclerurus albigularis</i>	<i>albigularis</i>	<i>propinquus</i>	<i>albigularis</i>
<i>Grallaria regulus</i>	<i>regulus</i>	<i>carmelita</i>	<i>regulus</i> (?)
<i>Grallaria</i>		<i>bangsi</i>	
<i>Grallaricula</i>		<i>ferrugineipectus</i>	<i>ferrugineipectus</i>
<i>Drymophila caudata</i>	<i>caudata</i>	<i>hellmayri</i>	<i>klagesi</i>
<i>Dysithamnus</i>	<i>olivaceus</i>	<i>olivaceus</i>	
<i>Myrmopagis schisticolor</i> ...	<i>interior</i>	<i>sancta-marta</i>	<i>sancta-marta</i>
<i>Scytalopus</i>	<i>micropterus</i>	<i>sancta-marta</i>	<i>sancta-marta</i>
<i>Attila</i>		<i>rufipectus</i>	⁴
<i>Euchlornis aureopectus</i> ...	<i>aureopectus</i>	<i>decora</i>	<i>festiva</i>
<i>Myiodynastes chrysocephalus</i>	<i>intermedius</i>	<i>intermedius</i>	<i>intermedius</i>
<i>Pyrrhomyias vieillotoides</i> ..		<i>assimilis</i>	<i>vieillotoides</i>
<i>Elania pudica</i>	<i>pudica</i>	<i>pudica</i>	<i>pudica</i>
<i>Tyranniscus nigrocapillus</i> ...	<i>nigrocapillus</i>	<i>flavimentum</i>	<i>nigrocapillus</i> (?)
<i>Tyranniscus</i>	<i>improbis</i>	<i>improbis</i>	<i>improbis</i>
<i>Serpophaga cinerea</i>	<i>cana</i>	<i>cana</i>	<i>cana</i>
<i>Euscarthmus</i>	<i>granadensis</i>	<i>granadensis</i>	
<i>Oethaeca diadema</i>	<i>diadema</i>	<i>jesupi</i>	<i>diadema</i>
<i>Turdus olivater</i>		<i>sancta-marta</i>	<i>olivater</i>
<i>Catharus fuscater</i>	<i>fuscater</i>	<i>sancta-marta</i>	
<i>Henicorhina</i>	<i>leucophrys gut- tata</i>	<i>hilaris bangsi</i>	<i>leucophrys ven- ezuelensis</i>
<i>Cistothorus</i>		<i>alticola</i>	<i>alticola</i>
<i>Vircosylva josepha</i>	<i>josepha</i>	<i>miranda</i>	<i>miranda</i>
<i>Pygochelidon</i>	<i>cyanoleuca</i>	<i>cyanoleuca</i>	<i>cyanoleuca</i>
<i>Basileuterus</i>	{ <i>cinereicollis</i> <i>coronatus</i> }	<i>conspicillatus</i>	<i>coronatus</i> (?)
<i>Myioborus</i>		<i>flavivertex</i>	<i>albifrons</i>
<i>Myioborus</i>	<i>verticalis</i>	<i>verticalis</i>	<i>verticalis</i>
<i>Diglossa</i>	<i>albilateralis</i>	<i>albilateralis</i>	<i>albilateralis</i>
<i>Diglossa sittoides</i>	<i>similis</i>	<i>similis</i>	<i>similis</i>

² Recorded from the Temperate Zone.

³ Recorded from the Temperate Zone of the Central Andes.

⁴ Recorded from western Venezuela.

<i>Sporathraupis cyanocephala auricrissa</i>	<i>margaritæ</i>	<i>hypophæa</i>
<i>Tangara</i> <i>heinei</i>	<i>heinei</i>	<i>heinei</i>
<i>Tangara</i> <i>cyanoptera</i>	<i>cyanoptera</i>	<i>cyanoptera</i>
<i>Pacilothraupis</i> ² <i>palpebrosa</i> <i>subsp.</i>	<i>melanogenys</i>	² <i>palpebrosa mel-</i> <i>anops</i>
<i>Chlorophanes frontalis</i>	<i>psittacina</i>	<i>frontalis</i>
<i>Pheucticus</i>	<i>laubmanni</i>	<i>laubmanni</i>
<i>Sporophila</i> <i>luctuosa</i>	<i>luctuosa</i>	
<i>Buarremon</i>	<i>basilicus</i>	<i>phæopleurus</i>
<i>Atlapetes</i>	<i>melanocephalus</i>	
<i>Catamblyrhynchus diadema diadema</i>	<i>diadema</i>	

Analysis and summary of this table yields the following results:

Common to all three ranges.....	19
Common to Venezuelan Andes and Eastern Andes only; Sierra Nevada form distinct.....	10
Common to Venezuelan Andes and Sierra Nevada only...	13
With representative forms in Venezuelan Andes and Sierra Nevada respectively, but wanting in Eastern Andes.....	6
Common to Eastern Andes and Sierra Nevada only.....	4
With representative forms in Eastern Andes and Sierra Nevada respectively, but wanting in Venezuelan Andes.	3
Represented by a different form in each range.....	12
Isolated forms, peculiar to the Sierra Nevada.....	8

Total number of Subtropical Zone forms in Sierra Nevada.....	75
Autochthonous Subtropical Zone forms in Sierra Nevada.....	39

There are thus only four cases in which a given form is common to the Eastern Andes and the Sierra Nevada alone: *Dysithamnus olivaceus*, *Euscarthmus granadensis*, *Sporophila luctuosa*, and *Catamblyrhynchus diadema diadema*. There is reason to believe that, when the Andes of Venezuela shall have been more systematically investigated, these four forms will be found there, in which case they would then fall into the class containing the forms common to all three ranges. There are also three cases in which the forms from the Sierra Nevada and Eastern Andes respectively are closely related, while a representative from the Venezuelan Andes is wanting. We venture to predict

that such will eventually be discovered for the groups represented by *Odontophorus atrifrons* and *O. variegatus*, *Chamaepetes*, and *Catharus fuscater*, and that such forms, when found, will prove to be identical with the Sierra Nevada form or else different from either. It seems to be the rule that where the forms of the Eastern Andes and Venezuelan Andes respectively differ from each other, the form of the Sierra Nevada is either identical with that of the latter range or else distinct from either. In several cases closely related or identical forms inhabit the Venezuelan Andes and Sierra Nevada, without any representative whatever in the Eastern Andes (see Figure 6), and with but

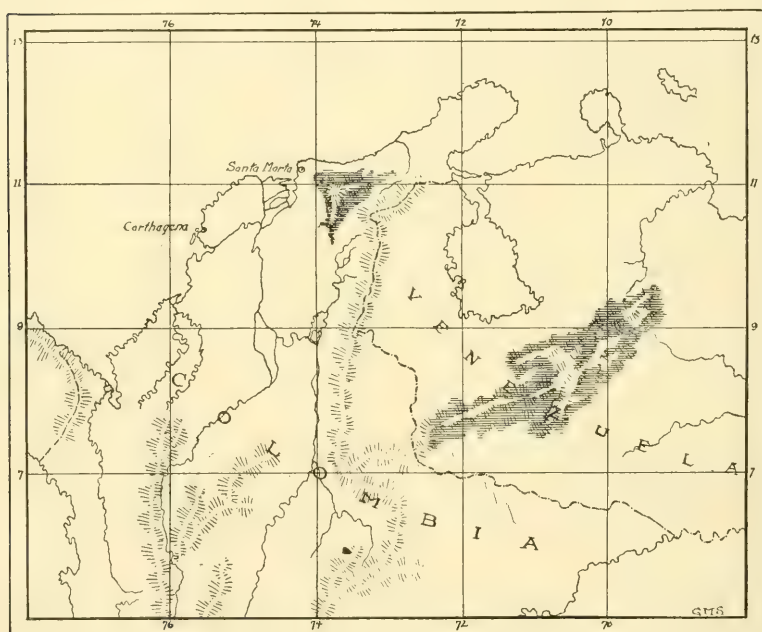


FIG. 6. Discontinuous range of *Aulacorhynchus calochrychus*, a Subtropical Zone species found in the Venezuelan Andes and the Sierra Nevada de Santa Marta.

few exceptions the forms from the Venezuelan Andes and Sierra Nevada respectively are more closely allied to each other than to the form from the Eastern Andes. The inference to be drawn from these

facts is unescapable, but before considering the case further we propose to offer a few general remarks on the

Origin of the Subtropical Zone Fauna.—The significance of the restriction of the Subtropical Zone to the latitudinal limits of the Tropical, and of its failure to reach sea-level at any point, seems entirely to have escaped attention until very recently. The case has no parallel whatever in the Nearctic Region, where all the various life-zones are primarily latitudinal in character. The fact that the Subtropical Zone is wholly altitudinal, and co-extensive with the Tropical Zone, indicates that its life, taken as a whole, must have been derived from that of the latter, as Dr. Chapman has shown. But when we come to trace the origin of any given Subtropical form or group we are apt to encounter difficulties. The profound changes which so many of the Subtropical forms must have undergone in the transition, judging by comparison and analogy, sufficiently attest the potency of the influence exerted by temperature and humidity in modifying external characters. Often these modifying influences have resulted in the evolution of distinct genera, confined to the Subtropics. So far, indeed, has this evolution proceeded in some cases, as for instance among the hummingbirds, that we are frequently at a loss for a clue to the lines it has followed. If we could be sure that all the Subtropical forms in a given region had actually been derived from the existing Tropical forms living immediately below them the problem would be simple by comparison, but such an assumption would probably seldom be justified. There is no question that the physiographic and climatic changes which are known to have taken place in tropical America during Tertiary and Quaternary times must have caused much shifting of its bird-population, and consequent modification and extinction of many species. At the present time we often find what appears to be the nearest ally of a Subtropical Zone form in a more or less remote part of the Tropical Zone. Not until the ranges of all the various forms involved have been accurately worked out and carefully plotted, and their inter-relationships studied in more detail, will we be in a position to even approximate a solution of this question. Much preliminary work thus remains to be done if valid conclusions are ever to be reached.

Whatever results such a study may yield, we need not assume that every Subtropical form, as such, must have had its *immediate* origin

in a corresponding form in the Tropical. The very fact of its survival under the changed conditions of environment indicates a certain plasticity in organization, which may continue in effect, and permit it to vary still further under the slightly different conditions encountered in extending its range. Thus we may explain the case of *Atlapetes*, for instance, which, with its thirty-six completely and incompletely differentiated forms, was probably derived from a much smaller group of Tropical ancestors. On the other hand, it is conceivable, indeed probable, that in some cases the same Tropical Zone species may have given rise to two or more Subtropical Zone forms in different parts of its range. It seems unlikely, judging by analogy, that certain Subtropical forms of wide range have had a simultaneous development in all parts of their range. In such case it would imply that the "original stock forms" from which they sprang must have had a correspondingly wide range, and that the causes which operated to produce the new forms were applied at approximately the same time, and with precisely the same results throughout.

Once a new Subtropical form had been developed and become established in a region undergoing elevation, it would naturally tend to extend its range as the land came up to the proper level on either side, and thus the new ground would be occupied before other competing forms could be developed from the Tropical Zone. Development by parallelism may have occurred, it is true, among the forms of the Subtropical Zone, but it is far more likely that latitudinal extension of range, involving renewed adjustment to varying conditions, competition with allied forms, and sometimes virtual or actual isolation eventually, has played a most important part in the evolution of the life of this zone as we know it today, and is largely responsible for the number and diversity of the existing forms which characterize it.

If this be granted, it follows that the centers of adaptive radiation for the Subtropical fauna must have been located in those parts of the zone which were the first to rise above the altitude of 5,000 feet, or where there were mountains at least as high already in existence when its evolution began. Moreover, the farther the fauna advanced from these centers towards the periphery of its range, the more greatly would it tend to become modified and impoverished.

The Subtropical Fauna of the Santa Marta Region.—We now have to explain, in view of the foregoing considerations, the peculiarities

and affinities of the Subtropical Zone as it is represented in the Sierra Nevada de Santa Marta. It is well specialized, containing no less than thirty-nine autochthonous or peculiar forms, of which twenty are entitled to rank as species. Thus it may properly be considered to constitute a distinct Fauna, for which we propose the name *Sierra Nevada*. This degree of specialization, taken in connection with its obviously depauperate character as compared with neighboring regions (to which attention has already been called), implies either that its constituent elements have been developed independently, and have always been isolated from their congeners, or else that the region to which they are now confined marks the extremity of their former range, the continuity of which has been interrupted. In the one case the Subtropical fauna would be entirely autochthonous, similar forms (where such occur) having been developed by parallelism, while in the other case the fauna would be derivative, and due to latitudinal extension of range, followed in many cases by modification as the indirect result of subsequent isolation. It is quite possible that such distinct forms as *Pyrrhura viridicata*, *Helianthea phalerata*, *Automolus rufipectus*, *Grallaria bangsi*, and *Atlapetes melanocephalus* may have arisen in the former way, but if so, we are unable to indicate with any degree of certainty their Tropical Zone antecedents, if, indeed, these are still extant.

Although the Subtropical Zone of the Sierra Nevada is separated from that of the Eastern Andes (at its northern extremity) by a distance of less than twenty miles, there are only four species which are common to the two ranges but not found elsewhere, and only three which have representative forms in these two ranges alone. As already intimated, there are grounds for suspecting that some, if not all, of these cases will be relegated to a different category when the Venezuelan Andes shall have been more thoroughly explored. In any event it is obvious that the Subtropical fauna of the Sierra Nevada, considered as a whole, has practically nothing to do with that of the Eastern Andes, and could not have been derived therefrom directly. It is true that the two ranges have numerous forms in common, but with the few exceptions above noted (and which may not be valid) these are forms of more general distribution, and without especial significance in this connection. The zoölogical evidence is thus fully in accord with the geological evidence, and we may confidently assert

that the Sierra Nevada de Santa Marta does not now have, and never has had, any direct relation whatever with the Andean system of Colombia.

But when we come to examine and compare the Sierra Nevadan Fauna with the Subtropical of Venezuela the case is decidedly different. No less than thirteen forms prove to be common to both, but wanting or else represented by a distinct form in the Eastern Andes, while six others are represented by closely related forms, having no analogue whatever in this latter range. Twelve others in addition have representatives in all three regions, but in almost every case the form from the Sierra Nevada is more closely allied to the Venezuelan form than to that of the Eastern Andes. (See Figure 7.) There are

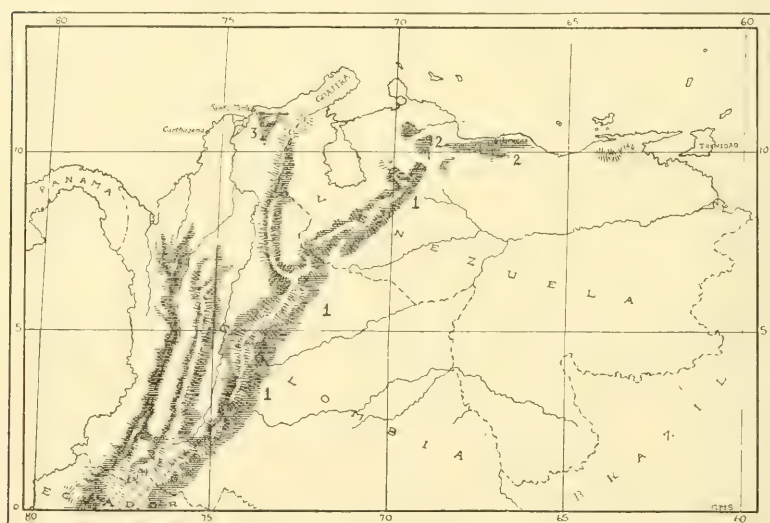


FIG. 7. Ranges of *Xenicopsis montanus striaticollis* (1), *X. montanus venezuelanus* (2), and *X. montanus anxius* (3), to show the development of a distinct Subtropical Zone form in the coast range of Venezuela and in the Sierra Nevada de Santa Marta respectively.

also ten cases in which the Sierra Nevadan form is distinct from that of the Venezuelan Andes and Eastern Andes, which are identical. Under these circumstances we may be fairly certain that in the cases (nineteen in number) where the forms of all three ranges are the same

they have entered the region by way of the Venezuelan Andes rather than by the Eastern Andes.

Such evidence as this points unmistakably towards a former connection of the Sierra Nevada with the mountains in northern Venezuela, the general trend of which is similarly parallel with the coast line, but which appear to approximate the northeastern spur of the main Andean system very closely, although the two are not actually joined above the elevation of 4,500 feet at the present time.¹⁷ The indications are that these coast mountains are the remnants of an ancient system which originally was much more extensive, and reached far out into the Caribbean Sea, beyond the chain of islands known as the Leeward Islands (embracing the Dutch West Indies, Los Roques, Orchilla, Blanquilla, etc.). At this period the Sierra Nevada de Santa Marta must have formed the westernmost extension of this great system, which was a prominent feature of the geography of the southern continent long before the Andes were elevated above the general level. Possibly the several genetically isolated Sierra Nevada species may have originated independently at this time, but if so they must have developed with the mountains standing at the same level, instead of as a result of a gradual elevation over a given area, as was probably the case with the Andean forms. This statement is predicated upon the fact that the mountain system in question was in existence prior to the Tertiary, when we believe that evolution of avian forms was at its height. Subsequently to this period, after the Venezuelan Andes were thrown up, a connection with them was established, sufficient to carry the fauna of the Subtropical Zone from one to the other. It would seem as if the coast range must have received by far the larger part of its Subtropical forms from this source. Subsequent erosion or subsidence has since destroyed the connection, and subsidence on a grand scale, leaving only the tops of the former mountains above the level of the sea in the form of islands, has completely separated the two ends of the once continuous chain, inducing further

¹⁷ Cf. Sievers, *Petermanns Mitteilungen*, XLII, 1896, pl. II. It should be explained that up to this point we have used the term "Venezuelan Andes" to cover both the Andes of Merida and the coast range. There is known to be some difference between the Subtropical Zone faunas of these two ranges, which we hope to discuss in another connection, but this circumstance need not affect the validity of any conclusions we may reach with reference to the Sierra Nevada.

evolutionary changes in the forms which had succeeded in reaching the western extremity of the chain, through the operation of influences due to isolation.

This theory of the origin of the Subtropical of the Sierra Nevada seems to sufficiently account for all the facts in the case: the impoverished fauna; the occurrence of several highly peculiar, isolated forms; the resemblance of the fauna as a whole to that of the Venezuelan Andes; and the dissimilarity between it and the corresponding fauna of the Eastern Andes. It is supported by such geological evidence as we have (compare Sievers, *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, XXIII, 1888, 67, and *Petermanns Mitteilungen*, XLII, 1896, 128). There is another bit of collateral evidence which also has considerable interest and significance in this connection, and may be referred to briefly. It is known that *Brachyospiza capensis peruviana* is properly a form of the Temperate Zone, but that it is one of the few forms of that zone which is capable of existing at lower altitudes. We find it on the island of Curaçao at sea-level, under a slightly different phase (*insularis*), the lone survivor of a once extensive Subtropical and Temperate fauna which must have inhabited this part when it stood perhaps as high as the Sierra Nevada does now.

THE TEMPERATE ZONE.

Character and Extent.—The Temperate Zone is poorly represented in the Sierra Nevada de Santa Marta, both in characteristic vegetation and in bird-life. This is of course due in part to the restriction of the area falling within its limits here,¹⁸ which naturally operates to restrict the diversity of its life. Its lower boundary may be set at about 8,500 or 9,000 feet, mainly on the ground that this elevation constitutes the upper limit for a considerable number of Subtropical Zone forms, but many species which in the Andes are confined to the Temperate Zone forests are present here as low down as 5,000 feet, and thus enter the lower zone, at least on the north slope of the Nevada. There are no heavy forests in the region under discussion at the altitudes at which the Temperate Zone forests of the Andes lie, such

¹⁸ The Temperate Zone as laid down on the map is surely out of proportion, but its true limits are practically unknown except in the San Lorenzo region and the Macotama Valley, and due allowance must be made for the insufficiency of the base-map.

vegetation as is found consisting of gnarled and stunted trees and open shrubbery, and this only in limited quantities. The summit of the San Lorenzo is high enough to catch a certain number of Temperate Zone forms, and it appears that the causes which have induced the lowering and overlapping of the zonal limits in the Sierra Nevada are not operative here, nor yet on the south slope of the main range, of which, however, little is yet known. The upper altitudinal limit of the Temperate Zone is even more difficult to fix with any degree of precision, because of the fact that so many of its characteristic forms range upward into the Paramo Zone, while the species of the latter zone are apt to be found lower down than is ordinarily the case in the Colombian Andes. We may, however, settle upon an arbitrary limit of 11,000 feet to mark the upper boundary of the Temperate Zone, while admitting that it is variable to a considerable extent. In the subjoined list such forms as habitually range down into the Subtropical Zone are indicated by an asterisk, while those that enter the Paramo Zone are similarly indicated by a dagger.

Birds of the Temperate Zone.

* <i>Amazona mercenaria</i>	* <i>Semimerula caczela</i>
*† <i>Systellura ruficervix</i>	* <i>Cinclus rivularis</i>
* <i>Metallura districta</i>	* <i>Henicorhina leucophrys anachoreta</i>
† <i>Ramphomicron dorsale</i>	<i>Orochelidon murina cyanophæa</i>
<i>Grallaria rufula spatiator</i>	<i>Hemispingus basilicus</i>
* <i>Scytalopus latebricola</i>	<i>Conirostrum rufum</i>
<i>Heliochera rubrocristata</i>	<i>Diglossa nocticolor</i>
* <i>Mecocerculus leucophrys setophagoides</i>	<i>Idiospiza oreophila</i>
† <i>Octhæca poliogastris</i>	† <i>Catamenia alpica</i>
<i>Octhodiæta pernix</i>	* <i>Brachyspiza capensis peruviana</i>
* <i>Orodynastes striaticollis striaticollis</i>	<i>Spinus spinescens capitaneus</i>

Faunal Affinities.—The disproportion between the life of the Temperate Zone and that of the other zones, considered collectively, is even greater than in the case of the Subtropical. Compared with the same zone as represented in the Colombian Andes the discrepancy is also conspicuous. Expressed in numbers, in the Santa Marta region

the Temperate Zone constitutes approximately 5 per cent of the total resident avifauna, while in the Andes it constitutes 9.6 per cent, and no less than one hundred and four species are represented in the Andes, as against only twenty-two in the region under consideration. These facts serve to strengthen the conclusions at which we have already arrived from a study of the two lower zones, with reference to the insular character of the fauna of this region. We proceed to a consideration of the relationships of the Temperate Zone of the Sierra Nevada by comparing it directly with the same zone as it is found in the Venezuelan Andes and Colombian Andes respectively.

Table showing Representative Distribution of Temperate Zone Forms.

Group.	Colombian Andes.	Sierra Nevada.	Venezuelan Andes.
<i>Amazona</i>	<i>mercenaria</i>	<i>mercenaria</i>	
<i>Systellura</i>	<i>ruficervix</i>	<i>ruficervix</i>	<i>ruficervix</i>
<i>Metallura</i>	<i>tyrianthina tyr- ianthina</i>	<i>districta</i>	<i>tyrianthina oreo- pola</i>
<i>Ramphomicron</i>	<i>microrhynchum</i>	<i>dorsale</i>	<i>microrhynchum</i>
<i>Grallaria rufula</i>	<i>rufula</i>	<i>spatiator</i>	
<i>Scytalopus</i>	<i>meridanus</i>	<i>latebricola</i>	<i>meridanus</i>
<i>Heliochera</i>	<i>rubrocristata</i>	<i>rubrocristata</i>	<i>rubrocristata</i>
<i>Mecocerculus leucophrys</i>	<i>setophagoides</i>	<i>setophagoides</i>	<i>setophagoides</i>
<i>Oethæca</i>	<i>lessoni</i>	<i>poliogastris</i>	
<i>Oethodiata</i>	<i>fumigata</i>	<i>pernix</i>	<i>lugubris</i>
<i>Orodynastes striaticollis</i>	<i>striaticollis</i>	<i>striaticollis</i>	<i>striaticollis</i>
<i>Semimerula</i>	<i>gigas gigas</i>	<i>cacozela</i>	<i>gigas pallidiven- tris</i>
<i>Cinclus</i>	<i>leuconotus</i>	<i>rivularis</i>	<i>leuconotus</i>
<i>Henicorhina leucophrys</i>	<i>guttata</i>	<i>anachoreta</i>	subsp.
<i>Orochelidon murina</i>	<i>cyanophæa</i>	<i>cyanophæa</i>	
<i>Hemispingus</i>	<i>atropileus</i>	<i>basilicus</i>	
<i>Conirostrum</i>	<i>rufum</i>	<i>rufum</i>	
<i>Diglossa</i>	$\left\{ \begin{array}{l} \textit{lafresnayei} \\ \textit{aterrima} \end{array} \right\}$	<i>nocticolor</i>	<i>lafresnayei</i>
<i>Idiospiza</i>	<i>inornata minor</i>	<i>oreophila</i>	
<i>Catamenia</i>	<i>alpica</i>	<i>alpica</i>	
<i>Brachyspiza capensis</i>	<i>peruviana</i>	<i>peruviana</i>	<i>peruviana</i>
<i>Spinus spinescens</i>	<i>spinescens</i>	<i>capitaneus</i>	

Owing to lack of positive information with regard to the occurrence of certain Temperate Zone forms in the Venezuelan Andes the

above table is not as complete as could be wished; nevertheless, it agrees well in the main with the same comparisons of the life of the Subtropical Zone for the three regions in question. The degree of differentiation shown by the Sierra Nevada Temperate Zone fauna, as compared with that of the other two ranges, is even better marked than for the Subtropical Zone. The Sierra Nevada has only nine



FIG. 8. Ranges of the northern forms of *Octodiata*, a genus of the Temperate Zone with a representative each in the Colombian Andes, the Venezuelan Andes, and the Sierra Nevada de Santa Marta. (1) *O. fumigata*; (2) *O. lugubris*; (3) *O. pernix*.

Temperate Zone forms in common with the Colombian Andes, and but five in common with both the Colombian and the Venezuelan Andes together, while in thirteen cases (ten of which involve specific differences) it possesses a distinct form of its own (one of which it shares with the Venezuelan Andes.) There are also four groups in which each region has a distinct form. (See Figure 8.) Considering the small number of forms found in this zone, this is a remarkable degree of specialization, perhaps sufficient to entitle the region to be set off as a distinct fauna.

To account for the life and characteristics of the Temperate Zone in the Sierra Nevada de Santa Marta we invoke the same hypothesis which we have already presented in detail when discussing the origin of the fauna of the Subtropical Zone. The degree of specialization to which more than half of the Temperate Zone forms have attained, taken in connection with their small number in the aggregate, indicates that they are the remnant of a fauna which must have reached the extremity of its range by latitudinal extension, and then have been cut off, resulting in isolation with subsequent differentiation. This was probably true even in the case of such forms as *Amazona*, *Gral-laria*, *Scytalopus*, *Octhaeca*, *Henicorhina*, and *Diglossa*, which are represented in the zone below by allied forms. Of these the case of *Henicorhina leucophrys anachoreta* may be cited as a typical example. It is represented in the Subtropical by a specifically distinct form, *Henicorhina hilaris bangsi*, which, however, is much more closely allied to *H. hilaris hilaris* of Ecuador, and almost certainly entered this region independently of the other. Indeed, their respective ranges are not even contiguous. The forms of this zone (considered at large) fall naturally into two groups, as pointed out by Dr. Chapman, those obviously derived from Subtropical antecedents, and those which are found at sea-level in southern South America, and which have reached their present range in the northern part of that continent by latitudinal extension. So far as our region alone is concerned, however, we believe that the Temperate Zone fauna is mainly derivative, and has reached its present ground by way of the Venezuelan Andes and the western extension of the coast range.

The "anomalies in distribution" to which Dr. Chapman alludes (on page 160 of his work), in discussing the Temperate Zone of this region involve the records for "*Buarremon assimilis*" and *Myospiza* "ma-

nimbe" (= *humeralis meridana*). The first may be briefly dismissed as having been based on an error in identification in Dr. Allen's list (later corrected by Dr. Allen himself). The case of *Myospiza* is no doubt authentic, since this bird was taken by the junior author at about the same elevation. It would seem to be a case where a Tropical Zone species has followed up its natural habitat far above its usual range, and is probably to be explained by the presence of savannas on this slope within the confines of the Temperate Zone. *Cinclus rivularis* and *Brachyspiza capensis peruviana*, on the other hand, have extended their range in the opposite direction, following their habitat downward through the Subtropical Zone.

THE PARAMO ZONE.

Character and Extent.—This zone, so extensive in the Andes of Colombia, especially in the eastern and central cordilleras, is greatly restricted in the Sierra Nevada de Santa Marta, and contains but few typical forms.¹⁹ The conditions are practically the same as on the vast paramos of the Andes, but on so small a scale that an extensive bird fauna is an impossibility, this circumstance naturally not favoring the development or maintenance of a large number or great variety of forms. The ecological conditions obtaining in the Paramo Zone have already been fully described in the chapter on that subject. We would set the lower limit of this zone at about 11,000 feet on the north slope of the Sierra Nevada. The fact that the tree-limit lies so much lower down here than it does in the Andes is responsible for several species of this zone ranging more or less below this level, and mingling with the species of the Temperate Zone. It is hard to say, for instance, whether *Ramphomicron dorsale*, *Catamenia alpica*, and *Phrygilus unicolor nivarius* are properly Temperate or Paramo Zone forms, since they are known to range from 9,000 to 15,000 feet, and they have accordingly been allocated mainly by analogy. The upper limit of the Paramo Zone is of course the snow-line, which here lies at about 15,000 feet, varying with the season up to 16,000 feet.

¹⁹ The area assigned to this zone on the map is obviously entirely too large by comparison, in consequence of the inaccuracy of the map in question.

Birds of the Paramo Zone.

* <i>Capella jamesoni</i>	<i>Cinclodes oreobates</i>
<i>Oxygogon cyanolæmus</i>	<i>Troglodytes monticola</i>
<i>Leptasthenura andicola extima</i>	* <i>Phrygilus unicolor nivarius</i>
* <i>Asthenes wyatti wyatti</i>	

Forms here marked with an asterisk range downward into the Temperate Zone.

Faunal Affinities.—Omitting *Ramphomicron dorsale* and *Catamenia alpica*, which have already been discussed under the Temperate Zone, there remain only seven species of undoubtedly Paramo Zone affinities, as against nineteen known from the Andes of Colombia—a sufficiently significant comparison. But even these show a degree of specialization in keeping with what we have been led to expect from a study of the fauna of the lower zones. *Capella jamesoni* and *Cinclodes oreobates* are the only forms which are found unchanged in the Colombian Andes, as well as in the Andes of Venezuela. *Asthenes wyatti wyatti* was described from the Eastern Andes, but there is reason to believe that the Sierra Nevada bird is in reality distinct. *Oxygogon cyanolæmus* (see Figure 9) is a representative of *Oxygogon guerinii* of the Eastern Andes and *Oxygogon lindenii* of the Venezuelan Andes; *Leptasthenura andicola extima* is similarly a representative of *Leptasthenura andicola exterior* and *Leptasthenura andicola certhia* of the same regions respectively; and *Phrygilus unicolor nivarius* is also similarly related to *Phrygilus unicolor geospizopsis*. It is significant in the case of the *Phrygilus* that the Santa Marta form is apparently the same as the bird from the Andes of Venezuela. Only *Troglodytes monticola* appears to have no very close relative, but it belongs to the same group as *Troglodytes solstitialis* and *Troglodytes solitarius*, both alticoline but not Paramo Zone forms.

We reach the same conclusion with regard to the Paramo Zone of the Sierra Nevada as we have with the two zones below, namely, that its fauna has been derived by latitudinal extension from the coast range of Venezuela, and subsequently isolated by submergence of the greater part of this range. The fact that such Paramo Zone forms exist here argues that this submerged mountain chain must have attained a height sufficient to permit such an extension of range. Possibly 11,000 or 12,000 feet would have sufficed, if we are justified in

assuming that the east and west trend of the range would have had the same effect in lowering the life-zones throughout its length as is the case at present in the Sierra Nevada. But here another factor, gla-



FIG. 9. Range of *Oxypogon*, a genus of the Paramo Zone, to illustrate the breaking up of the group into distinct species in the several parts of its range. (1) *O. stuebelii*; (2) *O. guerinii*; (3) *O. lindenii*; (4) *O. cyanolæmus*.

ciation, may have come into play. It is very probable that during the Pleistocene the snow-line may have stood at a somewhat lower level than today, and this would naturally have had the effect of lowering

all the life-zones and permitting latitudinal extension of range to have taken place at a lower level than would be possible under present climatic conditions.

SUMMARY AND CONCLUSION.

The bird-life of the Santa Marta region, considered from the distributional standpoint, falls naturally into four primary divisions or zones, which are coördinate with those represented in the Andean region of Colombia. These life-zones are the Tropical, Subtropical, Temperate, and Paramo. The Tropical Zone alone has terminal connections on either hand, being continuous with this zone as represented in adjacent parts, while all the zones above the Tropical are here strictly altitudinal, and entirely isolated from the corresponding zones elsewhere. They may be considered as faunal islands, and show in their depauperate fauna one of the recognized characteristics of islands. The diminution in the number of forms observed in ascending the mountain slopes appears to be greater and more abrupt in the Santa Marta region than in the Colombian Andes, which circumstance tends to add to the general impression that we are dealing with a fauna of insular character. Each life-zone may be regarded as a composite of the various elements, or species, which go to make it up, or as an association or assemblage of forms having approximately the same general range. The limits of any given zone, therefore, are as sharply or as loosely defined as the range of the various species which characterize it. We find that on the north slope of the Sierra Nevada de Santa Marta, owing to local conditions which involve the governing factors of temperature and humidity, there is a tendency toward a general lowering of the life-zones, causing a certain amount of overlapping in the ranges of some species which otherwise would not be found together.

The Tropical Zone comprises by far the larger part of the area of the region as a whole and comprehends more than three-fourths of its bird-life. Its fauna is exceedingly diverse in character, including as it does representatives of families and groups having widely different habits and haunts. It may be divided roughly into two belts, based on altitude, a Littoral or Lower Tropical and a Piedmont or Upper Tropical. Of these the Littoral possesses the larger number of species, while the Piedmont has few species peculiar to itself, being

characterized more by what it lacks. There is thus a marked falling off in species, even within the limits of this zone, with increase in elevation. Nor is the fauna of the Tropical Zone homogeneous in a latitudinal sense. It appears to be composed in the aggregate of an interesting combination of species of arid and humid proclivities; and only towards the eastern extremity of the region is the fauna pure. The Arid Tropical element in the fauna seems to have entered the region from the east, but there are indications that some of the forms ranged under this head may have entered from the west or south, since they are replaced by distinct forms to the eastward. In such case the forms of the latter class must have been later immigrants than the others, since the lower Magdalena Valley region, from which they entered, is much more recent, geologically speaking, than the Goajira Peninsula. Some of these Arid Tropical forms have apparently been unable to pass the belt of humid forest which reaches from sea-level to a high altitude on the northern flank of the Sierra Nevada, while others of this class have succeeded in crossing this biotic barrier and establishing themselves on the farther side.

The species of Humid Tropical affinities nearly all seem to have come from the south, being forms which belong to the humid section of the Cauca-Magdalena Fauna, and in the main to that element of this Fauna which is believed to have originally entered it from the east. In order to reach the Santa Marta region these species must have crossed on a northward extension of the forest belt to occupy the area which they now inhabit, and which is known to be of very recent formation. Hence we infer that their advent has been later than for any of the forms of the Arid Tropical.

The Santa Marta region is deficient in so many of the characteristic Tropical Zone forms of northern South America that we are justified in concluding that it must at one time, when the evolution of birds was at its height, have been a peninsula, practically cut off by water except on the east, whence it received the greater part of its bird-life originally. Probably this first immigration consisted entirely of forms of Arid Tropical origin and affinities. Later on, as land formed to the east and south, other forms came in from these directions, including some with Humid Tropical predilections, and this process is going on today. Under the peculiar conditions which obtain in this comparatively limited area a considerable number of indigenous forms

have already been developed. Probably its peculiarities and characteristics may entitle it to rank as a distinct faunal area.

The Subtropical Zone is entirely a humid forest association, and its bird-life is therefore of a more uniform character than that of the Tropical. Its lower altitudinal limit depends primarily upon the level of atmospheric condensation, which is ordinarily about 4,500 feet, but may be much lower as a result of local conditions, while its upper boundary is at an elevation of approximately 9,000 feet. Where forest is absent this zone, as such, is omitted, its place being taken by the zones immediately above and below respectively, certain species of each extending their usual range to fill the gap. In the Santa Marta region the Subtropical Zone, while entirely homogeneous, is much reduced, so far as number of species is concerned, when compared with adjacent regions. A careful analysis and comparison of its fauna discloses the fact that it has little directly to do with the same zone as it exists in the Eastern Andes, but is in fact very closely related to the Subtropical Zone of the Venezuelan Andes and coast range. This close relationship implies that the Sierra Nevada must once have been joined with these latter ranges, and that the connection has since been interrupted. The indications are that the Dutch West Indies and other islands along the coast are the remnants of this submerged and broken down mountain chain, which once sufficed to carry the fauna of the Subtropical Zone into the Sierra Nevada from farther east. From the comparatively small number of Subtropical forms occurring in the Sierra Nevada we infer that the range in question must have stood at the western extremity of the original chain, and that its fauna must have been derived almost entirely by latitudinal extension, since we find that by far the larger part of the Subtropical forms are more or less closely related to those of the Venezuelan Andes, and more remotely to those of the Eastern Andes of Colombia. Unfortunately we do not know just when the coast chain of mountains was broken up; could this be determined, we would have a geological clue to the evolution in time of the Subtropical fauna. We do know, however, that it could not have been until after the rise of the Venezuelan Andes and the establishment of a connection therewith sufficient to permit the passage of many alticoline species. This naturally opens up the whole question of the genesis and dispersion of the fauna of the Subtropical Zone. We find no positive

and little circumstantial evidence to favor the view that the Subtropical forms of the Sierra Nevada, as we know them today, originated where they are now found from Tropical Zone stock, although there are a few existing forms, the immediate relationships of which are not at once evident, which may have originated thus. The fact that the old coast range was in existence long before the rise of the Andes seems not to have induced the development of a peculiar Subtropical Zone fauna thereon, or if such an autochthonous fauna was developed under these circumstances, no indubitable traces of it remain. In brief, all the evidence points to the derivation of the fauna of the Subtropical Zone of the mountain ranges of northern South America from a more southern center of radiation by latitudinal extension. It is easy to understand how this might have been if we assume (what was certainly the case) that the Andean system was not uplifted simultaneously or equably. The first suitable areas raised to the necessary height would have become the theaters of development for the new and modified forms; as the elevation of adjacent areas continued and new territory kept opening up, it would naturally be populated promptly by extension from the original centers, which would of course be a much more rapid process than the modification of the Tropical Zone life of the region undergoing elevation to fit the new conditions. Thus the newly rising areas would tend to become occupied by an appropriate fauna as fast as they were raised. In this way we believe that the forms of the Subtropical Zone have largely been evolved and dispersed from a more limited center or centers of radiation. They do not invade the Temperate Zone on the north or south for the simple reason that the ground there is already occupied, and because the conditions of humidity are not to their liking.

The two upper life-zones, the Temperate and the Paramo, have much in common, and may conveniently be considered together. The Temperate Zone occupies the area between the levels of approximately 9,000 and 11,000 feet respectively, but some species obviously belonging to this zone are found as low down as 5,000 feet on the north slope of the Sierra Nevada. The Paramo Zone similarly begins at the upper level of the Temperate, extending thence to snow-line, but there is a considerable overlapping in range between the species of the two zones, due in part at least to the absence of true Temperate Zone forest in this region. Both zones are greatly restricted here, not

only in extent, but also in number of species; notwithstanding, their fauna shows a remarkable amount of specialization. None of the Temperate Zone forms in this particular region show clear indications of having been derived directly from Subtropical forms living immediately below them, but the great majority of the species in both Temperate and Paramo Zones, showing as they do unquestioned affinities with allies in the Venezuelan Andes, seem to have reached the region over precisely the same course as the fauna of the Subtropical Zone. We conclude, therefore, that the mountain system over which they passed could not have had an elevation of less than 11,000 or possibly 12,000 feet. It likewise follows that they have been isolated for a longer period of time than the Subtropical Zone forms.

Our studies of the avifauna of this restricted region have thus led us to certain general conclusions which may, we think, fairly be allowed to stand on the basis of the evidence presented. We find, in brief, that the bird-life of the Santa Marta region has in the main been derived from the east, under peninsular conditions, while there has been a more recent infusion of lowland forms from the west and south under present topographic conditions. We see further that an imposing mountain chain, comparable to the Andes in height even if not in extent, must once have stretched along the northern coast of the South American continent, in part where the waters of the Caribbean Sea now roll, serving as a pathway over which many Subtropical and alticoline forms have traveled to reach their present stations in its terminal remnant. From the circumstance that so many of these forms show evidence of having been derived indirectly from Andean antecedents we may, with somewhat less confidence perhaps, postulate a more southern, possibly equatorial, center or centers of origin and dispersion for the life of the Subtropical Zone in general. In all we see that, however complex the immediate problem may appear to be, and however difficult its solution, the diffusion of organic forms over the surface of the earth has not been haphazard, but has proceeded under the operation of certain fixed laws and principles, the discovery and formulation of which are the province of Zoögeographical Science.

LIST OF LOCALITIES.

The construction of a suitable base-map on which to plot the life-zones of the Santa Marta region has involved serious difficulties.

Aside from the coast, the region has never been adequately surveyed, and much of the detail shown on the maps of Simons (1881) and Sievers (1888) is conjectural. The courses of the streams as indicated by the former authority are often exceedingly inaccurate, as both Mr. Smith and the junior author unite in testifying. In the map which we present herewith an effort has been made to correct some of the worst of the errors into which previous authors have fallen, but it must be acknowledged that the final result is still far from satisfactory, and must be regarded at best as scarcely more than semi-diagrammatic. For many of the localities specified on the following list, therefore, the indicated position is only approximate, and due allowance must be made for such discrepancies as exist.

The list includes the names of all places, streams, swamps, and mountains mentioned in the text as situated in the Santa Marta region, with a reference to their location and a brief description of their physical features, faunal position, etc. This detailed information is intended to supplement the general account of the geography and physiography of the region as a whole, and should be consulted in connection therewith. The altitudes are quoted sometimes from one authority, sometimes from another, with the result that there is no uniformity in this respect. In fact, scarcely any two of the authorities agree in this matter—a circumstance which need excite no remark, since virtually all the figures given are based on the indications afforded by aneroid barometers, the inaccuracy and variability of which are well understood. While there are thus unavoidable inconsistencies and inaccuracies in details of this nature, it is hoped that they are not of such a kind or degree as seriously to affect the general value of this paper or to impugn the scientific conclusions at which we have arrived.

Aduriamaina.—A point on the southern spur of the Sierra Nevada, on the trail leading up to the Snow Peaks, where there is a hut built for shelter, in the midst of "lovely green pastures." Simons refers to this locality in describing his ascent of the Sierra Nevada; its altitude (according to Sievers) is 3,370 meters (11,050 feet).

Agua Dulce.—A plantation in the western foothills of the San Lorenzo, less than two miles south of Minca, on the road to the hacienda Cincinnati, and lying at an altitude of from 2,500 to 3,000 feet, in the upper Tropical Zone. It is very broken country, orig-

inally all heavily forested, but now with considerable cleared land. At the time of Mr. Smith's visit there was only a small coffee plantation there, where was secured his only specimen of *Urubitornis solitarius*, and a few other species. The junior author collected at this point only on August 16, 1911, and June 17, 1913, securing twenty specimens in all.

Alguacil.—An elevation south of San Sebastian, referred to by Sievers, and evidently the same as the Mount Chinchicua of Simons, who ascribes to it an elevation of 11,000 feet (10,000 feet on the map). Its slopes are said to be heavily wooded, even on the south side.

Ancha.—A river on the north slope of the Sierra Nevada, the upper course of which is known as the Rio Macotama, along which are situated the Indian villages of Santa Cruz, San Miguel, Taquina, and Macotama.

Aracataca.—A village on the river of the same name, on the road between Tucurinca and Fundación, where Mr. J. Ujhelyi obtained the types of the new forms described by Dr. von Madarasz in 1912 and 1913.

Ariguani.—A river which rises above the village of Pueblo Viejo, near where the southern spur of the Sierra Nevada terminates, and flows southward into the Rio Cesar, of which it is the last affluent.

Arihuacca.—A small village situated but little above sea-level on the Santa Marta Railway, not far from Rio Frio, and on a stream of the same name. Simons collected a few birds here on March 7 and 8, 1879.

Arroya de Arenas.—A cattle-ranch and travelers' station on the road from Rio Hacha to Barbacoas, a short distance north of the latter place. It is in the Arid Tropical Zone, just at the edge of the flood-plain of the Rio Camarones. A few birds were collected here on July 25 and 26, 1920.

Atanques (or *Atanques*).—An Indian village of 800 or 1,000 inhabitants, situated on the southern flank of the Sierra Nevada, about fifteen miles northwest of Valle de Upar (not "four miles . . . N.E." of this point, as erroneously stated in the *Ibis*, 1879, 204). Simons collected here on February 25 to 27 and March 9, 1878. Most of the species he secured were taken at 2,700 feet, which is the approximate altitude of the village itself, but a few, among them *Campylopterus phainopeplus*, were taken in a mountain gorge at 4,000 feet.

Badillo.—One of the principal affluents of the Rio Cesar, draining a large section of the south slope of the Sierra Nevada. Near where the road from Valle de Upar crosses the river is a village by the same name.

Barbacoas.—A little village of a half-dozen miserable huts, situated on the road leading south from Rio Hacha, where it crosses the Rio Camarones.

Bonda.—A small village (originally of Indians, but now of Colombians) on the Rio Manzanares, between eight and nine miles east of Santa Marta. It is on the road, or rather trail, which leads to Don Diego and Rio Hacha, and is only about 150 feet above sea-level, but the surrounding hills rise to perhaps 400 feet. It lies in the semi-arid coastal belt, near the junction of the Rio Matajira and Rio Manzanares, both of which flow through broad valleys, well wooded, and with many old "rastros," or tracts of second-growth brush, thus offering a greater diversity of cover and a larger radius of easily accessible country than any other point in this zone. Mr. Brown was located here for the first three months after his arrival in this region in December, 1897, working along the river valley and on the mountain slopes to the southeast, up to 6,000 feet or more. His specimens were all labelled "Santa Marta" or "Santa Marta Mountains," however. Mr. Smith with his party arrived on the scene a little later, apparently in June, 1898, and made Bonda his headquarters for a long period, the larger part of his collecting having been done at this point, if one may judge from the frequency with which the name occurs on his labels. It is practically certain, however, that a proportion of his specimens so labelled must have actually been taken at a greater elevation.

Buritaca.—A point on the north coast, at the mouth of the river of the same name, visited by Mr. Smith in September, 1899. It is a region of swampy forest, with open, swampy land along the river, and sandy beaches, where several species of shore-birds were collected.

Cabo de San Juan de Guia.—A cape on the north coast, about seventeen miles east and a little north of Santa Marta, which marks the eastern limit of the semi-arid lowlands in this direction.

Cacagualito.—A small plantation, now abandoned, on the road from Bonda to Rio Hacha. It is situated near the top of the divide beyond the valley of the Rio Matajira, at an altitude of 1,500 feet. It is

mountainous country, with forest and clearings, and lies in the foot-hills section of the semi-arid Tropical Zone, its avifauna being practically the same as that of Bonda, with the addition of certain forms from the Piedmont belt. Mr. Smith's party secured a considerable number of specimens here on different occasions.

Camarones.—A town on the north coast, at the mouth of a river of the same name, about fourteen miles west of Rio Hacha, marking the eastern limit of the humid forest belt on this coast.

Camperucho.—A village in the extreme southern part of the Santa Marta region, as here defined, where the trail from the Rio Cesar Valley swings abruptly to the northwest around the southern spur of the mountains. It is in a region of rolling savannas, inhabited by such characteristic birds as *Theristicus caudatus*, *Edicnemus bistriatus vocifer*, *Belonopterus cayennensis cayennensis*, and *Sturnella magna paralis*. A specimen of the last named was taken on August 8, 1920.

Cataca.—Properly speaking, one of the branches of the Rio Aracataca, but the two names appear to be often used interchangeably.

Cautilito.—According to Mr. Smith, who is the only one to use the name, this is merely a locality without any houses, near the mouth of the Quebra Mojada. The land here is all low, with clearings and second growth.

Cerro de Caracas.—A broad, well-defined mountain ridge, a spur of the Sierra Nevada proper, beginning just below San Miguel at the Macotama River, at an altitude of about 5,000 feet, and rising abruptly to about 8,000 feet, then gradually up to about 13,000 feet, where it ends in a jumble of jagged, naked pinnacles of rock, which form a barrier to farther ascent to the snow-capped peaks. The whole of its eastern end and southeastern flank, up to the crest on most parts, has been denuded of forest for generations past, and is covered with thick grass, resembling the prairie grass of the west-central United States. The northwestern side of the ridge is much more perpendicular, and is still forested to the crest, thus presenting perhaps the best cover for birds to be found anywhere in the region of San Miguel. Collections were made here by the junior author between March 31 and April 4, 1914, at various altitudes up to 12,000 feet. If Mr. Brown worked this ridge his specimens were doubtless labelled "San Miguel."

Cerro Quemado.—The name applied to the western end of the San

Lorenzo de Santa Marta. This part of the mountain has been deforested, probably by fire, and is covered with grass, shrubbery, a kind of bamboo cane, and a large species of bromelia. The altitude of the Cerro Quemado is given as 8,300 feet by the junior author.

Cesar.—The largest river of this region, taking its rise on the south slopes of the Sierra Nevada, and receiving nearly all the drainage from this part as well as from the western slopes of the Eastern Andes at their northern extremity. It flows southwestward through a level plain, forested in part, and in part savanna, to eventually join the Magdalena through a complicated lake and delta system. The upper part of its valley has numerous towns, villages, and plantations.

Chinchicua.—"A splendid mountain mass about 11,000 feet in height," in the southern part of the Sierra Nevada, referred to by Simons, who speaks of it as being the only wooded portion in this part of the range, and adds that it "intercepts and condenses all the clouds coming from the northeast; so that it is eternally raining in this place." Leading down to the southwest of this mountain is the *Valley of Chinchicua*, lying at an elevation of 6,500 feet, where Simons collected a few Subtropical Zone birds on February 15, April 15 and 16, 1878.

Chirua.—The name of a large valley and of the stream which drains it, lying on the north slope of the Sierra Nevada, east of the trail leading up the mountain from Dibulla. The valley extends east and west, and the stream empties into the Rio Ancha opposite the village of Pueblo Viejo. At its lower end it has an altitude of 2,000 feet, rising to 3,500 feet at its head. It is surrounded with mountains, rising to a height of 5,000 feet on the south side, known as the *Heights of Chirua*. The valley is sparsely inhabited by Indians, and nearly the whole of the lower portion has been cleared of forest in years gone by, and is given up to grass, second-growth scrub, or the primitive cultivations of the Indians. Both the valley and the heights were worked by the junior author in March, 1914. The avifauna of the latter is exclusively Subtropical in character, but some Tropical forms enter the valley. Simons secured a specimen of *Basileuterus mesochrysus* here at an elevation of 4,000 feet on August 21, 1878, and Mr. Brown made collections at this point also, in February and March, 1899, securing the types of several new forms. He gives the altitude as "7,000 feet," which is of course an overestimate, but it is evident that most of the specimens he collected here came from the higher elevations.

Cienaga.—More properly *San Juan de la Cienaga*, a city of between fifteen and twenty thousand inhabitants, twenty miles by rail south of Santa Marta, on the coast just at the eastern edge of the Cienaga Grande. Wyatt spent a few hours here on December 23, 1869, and refers to the abundance of various species of herons and shore-birds observed at that time. Mr. Smith's party spent a few days here in September, 1898, obtaining several species of shore-birds, several of which have not been recorded elsewhere in this region during migration. The junior author collected here also on October 18, 1913, taking specimens of *Charadrius semipalmatus* and *Thalasseus maximus*.

Cienaga Grande.—The name applied to a large brackish lake in the delta system of the Magdalena River, fed by offshoots from the main channel of that stream, and by the streams draining the western slope of the Sierra Nevada. It is separated from the sea by a low strip of sand, the Isla de Salamanca, leaving the main passageway at the eastern end. The surrounding country is low and marshy, and frequently overflowed.

Cincinnati.—A large coffee-plantation, or "hacienda," the property of the Cincinnati Coffee Company, lying on the western slope of the San Lorenzo de Santa Marta, between the altitudes of 3,000 and 5,500 feet, and thus involving both the Tropical and the Subtropical Zones. This plantation was formerly known as Valparaiso (the old Spanish name), under which it appears in the list of localities visited by Mr. Smith. At that time it was but a small clearing, while today it is the largest coffee-plantation in the region. Mr. Smith's party spent considerable time here, using it as a base for all their work in the highlands from March to June, 1899. Here it was, too, that the junior author began his work in this region on June 1, 1911, and where he continued to work at intervals up to the latter part of July, 1913, securing in the aggregate a very complete representation of the avifauna of the locality.

Cinto.—A locality on the north coast, near the head of a bay of the same name, where Mr. Smith's party collected a few hawks and herons in February and May, 1899.

Concha.—A small bay northeast of Santa Marta, into the head of which empties a small stream, *Quebra Concha*, flowing through a short valley. Here is a small stock-farm belonging to a resident of Santa Marta, a cart-road, built in 1914, leading out to it. Mr. Smith's col-

lection contains a few birds labelled as coming from this locality, which in one case is called *Playa Concha*.

Cordova.—A stream which takes its rise on the south slopes of the San Lorenzo, and empties into the sea near the town of Cienaga.

Dibulla.—A squalid village on the north coast, about thirty-five miles west of Rio Hacha, and about three miles east of the point where the trail leaves the coast for the Sierra Nevada, by way of Pueblo Viejo and San Miguel. The junior author collected here from February 21 to 28, 1914, and again on April 28 of the same year, securing one hundred and seventy-five birds in all.

Don Amo.—A plantation about fifteen miles east of Santa Marta, lying at an altitude of 2,000 feet, with mountain forest and clearings, where Mr. Smith's party obtained a few specimens on several occasions.

Don Diego.—An old plantation, now practically abandoned, owned by a French company, on the north coast at the mouth of the river of the same name, which is one of the largest flowing down the north slopes of the Sierra Nevada. There is a trail leading to it from Santa Marta, going out by way of Mamátoco, Bonda, and Jordan, thence down the Rio Piedras to the coast, and thence along the beach. Through disuse and lack of repair this trail is almost impassable, and it is much easier to reach the place by sea in a small boat. The region around Don Diego is heavily wooded with luxuriant forest, has a heavy rainfall, and is rich in birds and animals. Mr. Smith's party made an extensive collection here in the month of May, 1901, this being the last locality he worked before leaving the region, but only a few references (those involving new records) to the species secured were ever published. The junior author collected there continuously from January 14 to February 6, 1914, securing about five hundred specimens.

Donjaca.—A flag-station and passing-point for trains on the Santa Marta Railway, situated about midway between Gaira and Cienaga. It is on the coast, and surrounded by the thorny scrub and cacti peculiar to the semi-arid coastal belt. Two specimens were collected here on April 10, 1913, by the junior author.

El Libano.—More properly *Sierra del Libano*, a spur of the San Lorenzo de Santa Marta, 6,000 feet in altitude, and covered with heavy Subtropical Zone forest. Mr. Smith's party camped for some time

at this point in April and May, 1899, their collections made there containing numerous representatives of this zone.

El Lorenzo.—A slip for *San Lorenzo*, which see.

El Mamon.—An elevation in the southern Sierra Nevada de Santa Marta, said to reach a height of 10,000 feet. When Mr. Brown visited San Sebastian in the summer of 1899 he sent a native collector to work in the higher mountains nearby, among them El Mamon. The region in question he reported to be covered with grass, but with low woods along the mountain streams. Birds were scarce and shy. The specimens taken at this locality were marked "8,000 feet."

Fonseca.—A small town on the Rio Rancheria, certainly not more than 500 feet above sea-level, and situated on a level plain, about two miles from the foothills of the Sierra Nevada, which the river skirts. Here the valley between the Sierra Nevada and the Eastern Andes is only about twelve miles wide, and very flat. Observations and collections were made here on July 30 and 31, 1920. The fauna is essentially Arid Tropical in character.

Fundación.—A small village at the present terminus of the Santa Marta Railway, fifty-eight miles from Santa Marta. It lies just on the lower edge of the last remnants of the foothills of the Sierra Nevada, and in a southwesterly direction from the Snow Peaks. The Fundación River, one of the largest on the western slopes of the Sierra Nevada, flows through the village. The whole region was originally covered with Tropical Zone forest, which remains nearly intact on the south side of the village, but towards the north the land has all been cleared and planted with grass or bananas. Just west of the village is a marsh of perhaps fifteen acres, which has been planted to Pará grass, but in its central and deeper parts contains a considerable growth of a large-leaved plant of the nature of the wild plantain, intermingled with several varieties of shrubby trees. This marsh proved to be very rich in bird-life. The forest for miles in every direction has been cleared of hardwood trees of any size, and as a result has grown up with heavy scrub, almost impenetrable in places. There is a marked contrast between the forest of the foothills and that of the alluvial plain lying between them and the Cienaga Grande and Rio Magdalena, this difference involving the constituent species of trees and shrubs rather than the general aspect of the forest itself, and this in turn involving a corresponding difference in the bird-life. The

region under consideration was very thoroughly worked by the junior author, his first visit extending from August 7 to 18, 1913, and his second from October 6 to 20, 1915, during which two periods an aggregate of nearly eight hundred specimens was collected.

Gaira.—A small village on the Santa Marta Railway, on a river of the same name, about eight (?) miles south of Santa Marta, among low hills not far from the sea. With the exception of the land under irrigation and the narrow valley of the river, the whole region is very arid, with a great deal of giant cactus and thorny scrub. Collections were made here by the junior author on May 21, September 11 and 13, 1913.

Garupal.—One of the tributaries of the Rio Cesar, in the extreme southern part of the present region.

Goajira.—The name applied to the peninsula which separates the waters of the Caribbean Sea from those of the Gulf of Maracaibo. It is a low, sandy, arid region, supporting a pure Arid Tropical fauna.

Guairaca.—A bay on the coast, just west of Playa Brava; it takes its name from an ancient Indian village at its head. There is a specimen of *Geranospiza carulescens* in Mr. Smith's collection labelled as coming from this locality, under date of February 4, 1899.

Guallabal.—Simons, in referring to *Calliste desmaresti*, says that it is "very common at Guallabal, near San Antonio." The locality is not referred to elsewhere so far as we can discover, and its exact position being unknown it does not appear on the map.

Guatapuri.—One of the principal affluents of the Rio Cesar, rising in the Paramo de Chiruqua, and draining a large area on the south slopes of the Sierra Nevada.

Heights of Chirua.—See *Chirua*.

Horqueta.—See *La Horqueta*.

Jordan.—A plantation on a stream of the same name, and situated along the trail to Rio Hacha, about two miles east of Cacagualito, at an altitude of 500 feet. It is in a region of heavy forest, just within the humid coastal belt which extends eastward to Dibulla. Mr. Smith's party collected a few birds at this point on May 11, 1898.

La Concepción.—A plantation on the trail from Dibulla to Pueblo Viejo, a few miles below the latter place, where Mr. Brown collected extensively in the early months of 1899, on his second trip to the Sierra Nevada. The altitude is given as 3,000 feet, and both Tropical

and Subtropical Zone species were taken here, so that possibly a somewhat greater range in altitude may have been involved. Mr. Brown writes that it is "situated on a densely forested slope which extends far down into a deep valley where there is a swiftly moving stream. From this plantation one obtains a wonderful view of the country and the distant Caribbean Sea."

La Horqueta.—The name applied to a mountain with an altitude of about 7,000 feet, situated on the north side of the San Lorenzo, to which it is joined by a connecting ridge with an elevation of between 5,000 and 6,000 feet. It is a heavily forested and very humid region.

La Paz.—A locality referred to by Simons in connection with *Pteroglossus torquatus*. It is situated in the valley of the Rio Cesar, at the western base of the Eastern Andes, and is, therefore, strictly speaking, not in the Santa Marta region at all.

La Tigrera.—A point on the road from Mamatoco to Cincinnati and San Lorenzo, situated about halfway between Mamatoco and Minca, at an altitude of between 500 and 600 feet. It lies in the valley of a small stream called the Quebra Tamocal, or Tamocal Creek, which is used for irrigation purposes for the land to the south of Mamatoco. This valley is narrow, with broken foothills on either side, and lies near the upper edge of the semi-arid coastal belt. This locality was visited by the junior author on two occasions in August and September, 1911, and worked more thoroughly from April 29 to May 11, 1913, and was also visited again on November 6 of the same year.

Las Nubes.—A plantation on the northwest slope of La Horqueta, about three miles south of Onaca, where Mr. Smith's party did some collecting in November and December, 1898. While the plantation itself is not over 4,500 feet, many of the birds came from higher elevations, up to 5,500 feet, and such are of course Subtropical Zone forms. The locality has luxuriant mountain forest and clearings.

Las Taguas.—A point lying on the south slope of the San Lorenzo, at an altitude of about 5,000 feet, in the valley of one of the tributaries of the Rio Cordova. It is a heavily forested, humid section, included in the Subtropical Zone. Collections were made here by the junior author on June 19 and 25-30, 1911.

Las Tinajas.—The name of a locality without houses on the open mountain top, near the head of the Quebra Concha, at an altitude of about 2,000 feet, with forest all around. Here Mr. Smith's party secured a specimen of *Penelope aquatorialis* on January 11, 1901.

Las Vegas.—A coffee-plantation lying on the eastern end of a long ridge extending east from La Horqueta, and situated at an altitude of from 3,000 to 5,000 feet. Because of this range in elevation the collection made here by the junior author between May 28 and June 9, 1913, contains both Tropical and Subtropical Zone species. It is a region of very heavy forests and much humidity, the whole eastern slope of the Sierra Nevada and San Lorenzo having a greater rainfall than the western and northern slopes.

Loma Larga.—A little settlement along the trail from Rio Hacha to Fonseca, near where it crosses the eastern extremity of the Sierra Nevada. The altitude here is about 2,500 feet, but the crest of the range is about 5,000 feet, thus lying in the Subtropical Zone. The country in the vicinity is heavily wooded, and the fauna resembles that of the north coast. Collections and observations were made here on July 28 and 29, 1920.

Macotama.—At present only a small Indian village, but formerly the headquarters of the whole Arhuaco tribe. It is still the place of residence of the chief "medicine-man" or "doctor," as the Indians call him. It is situated in the valley of the Rio Macotama (under which name the upper part of the Rio Ancha is locally known) about ten(?) miles²⁰ above San Miguel. The altitude of the village is about 7,000 feet²¹ (not 8,000 feet, as stated by Mr. Bangs on Mr. Brown's authority), but the mountains rise on either side of the river to 11,000 or 12,000 feet. There is no forest belt low down in this valley, but only scattering trees and shrubs along the river and in the ravines. The village lies on the right bank of the stream as one ascends, and the mountain on that side is clothed only in grass as far as the eye can reach, with rarely a clump of low bushes. On the opposite side there is considerable second-growth, and higher up some virgin forest is still left between 8,000 and 9,000 feet, where the forest ends and paramo conditions begin. Mr. Brown made extensive collections here, and from the circumstance that these contain both Subtropical and Temperate Zone species it is evident that he covered the higher elevations in the vicinity as well as the valley in his work.

²⁰ According to the available maps, however, it is not over six miles.—W. E. C. T.

²¹ This is Mr. Carriker's statement. On Simons' revised map the altitude is distinctly given as 9,000 feet, while according to Sievers it is 2,580 meters (= 8,464 feet).—W. E. C. T.

The junior author collected in this same section at various intervals during the month of April, 1914.

Mamarongo.—A specimen of *Saltator maximus* collected by Mr. Brown on March 25, 1899, bears the name of this locality. It is probably somewhere in the Macotama Valley, but its exact position is unknown.

Mamatoco.—A small village four miles east of Santa Marta, on the Rio Manzanares, along the road to Bonda and Masinga. It is less than fifty feet above sea-level, with low, rocky hills to the north and east, and flat land to the south and west, much of which is under irrigation. Along the river there are forests, swampy in parts; on the higher land the vegetation is scrubby. Mr. Smith's party did some work here, beginning in February, 1899, and the junior author has also worked the locality at frequent intervals from 1911 to 1913. Practically all the specimens bearing this locality name were taken from one to two miles south of the village.

Manauré.—A coffee-plantation at the foot of the Eastern Andes, at an elevation of 2,700 feet, visited by Simons in May, 1878. In common with La Paz, this locality is not within the Santa Marta region proper, and the records made there are included in the present paper only because they are so closely bound up with the remainder of Simons' records. Two species, *Ramphastos ambiguus abbreviatus* and *Sittasomus sylvioides levis*, were secured here which have not yet been taken in the Santa Marta region proper.

Manzanares.—A river in the western coastal section, discharging into the sea at Santa Marta. Along its course are Bonda, Mamatoco, Masinga, and other places frequently referred to in the present paper.

Marocaso.—A "quiet village of about 150 inhabitants, a day's march from San Juan, on the banks of the Rancheria," 2,000 feet above sea-level, where Simons secured a specimen of *Troglodytes tessellatus* on January 26, 1878. (In Salvin and Godman's paper the name is misspelled "Maricosa.")

Masinga.—A village on the Rio Manzanares, two miles above Bonda, and presenting the same conditions as that place. *Masinga Vieja* is the site of an old village, three miles farther up the river. Mr. Smith's expedition collected a few birds at both places.

Matajira.—A stream which joins the Rio Manzanares near Bonda, coming in on the opposite or north side. The Matajira forms a long

curve above, and is crossed by the road running east from Bonda to Cacagualito; most of the birds so labelled by Mr. Smith were shot near this road, about three and one-half miles east of Bonda. The Matajira is bordered by open, dry forest; the average altitude is about 450 feet.

Mendiguaca.—A point on the north coast at the mouth of the stream of the same name (spelled "Mindehuaca" on the label), from which Mr. Smith sent in a specimen of *Falco columbarius* dated May 1, 1899.

Minca.—(Misspelled "Minea" by Salvin and Godman.) An old, now abandoned sugar-plantation, southeast of Santa Marta, and situated on the Rio Gaira (but not near its head, as erroneously given in Dr. Allen's list). It has an altitude of 2,200 feet where the road crosses the river. With the exception of a small area in the valley, it is all heavily timbered, while nearly all of the land, originally planted to sugar-cane or cleared for pasture, has grown up into tall, thick second-growth woodland. The region is well within the humid belt and has many species of birds from both the higher and lower levels of the Tropical Zone, forming as it does a kind of neutral belt between the semi-arid coast and foothills district and the humid cordilleras. The first reference to this locality dates back to 1860, when Sclater recorded a specimen of *Oryzoborus aethiops* as coming from there, the collector of which is not named. Simons appears to have spent three months, from January to March inclusive, 1879, at this point, while Mr. Smith's party worked there at intervals from late in May until early in August, 1899, and on a few other occasions. Collections were made here by the junior author in August, 1911, and again from June 16 to 28, 1913.

Naranjo.—A locality mentioned by Mr. Smith in connection with several species, and most likely situated on the Rio Piedras, below its junction with the Jordan, this being the only place by that name in this region known to the writer. The altitude is given as 500 feet.

Neguange (or *Nenguange*).—A locality on the north coast, not far from Playa Brava, in a region of low, open forest. The name appears on a few of Mr. Smith's labels under various dates.

Onaca.—A coffee-plantation on the northwest slope of La Horqueta, at an altitude of only 2,000 to 2,500 feet, worked by Mr. Smith's party in November and December, 1898, and January, 1899, also

again in January, 1900. It is a forested region, with extensive clearings and open grass-lands.

Palenque.—A cattle-estate on the Rio Manzanares, about midway between Bonda and Mamatoco, with an altitude of about 150 feet, in a region of "dry forest" and clearings. The name appears on a few of Mr. Smith's labels for birds taken in March, 1899.

Palomina.—An Indian village on the north slope of the Sierra Nevada, said to be situated on or near the river of the same name. Its exact position appears not to be known, no white man having ever visited it. Mr. Brown did not collect there in person, his specimens so labelled having been obtained for him by an "intelligent Indian trader." He adds that it is "two days' travel on foot east [north] from Pueblo Viejo," and that it is "said to be situated in a fertile valley by a fine stream and surrounded by high peaks." The altitude he gives for it is 5,000 feet, but this is of course merely conjectural under the circumstances, although it is to be noted that both Tropical and Subtropical Zone representative forms are included in the list of those recorded from this point.

Paramo de Chiriqua.—The enormous paramo lying at the headwaters of the Macotama River, and extending up to snow-line on the northeast side of the eastern Snow Peak. It has much level and gently sloping land, an abundant water-supply and more than the usual amount of stunted trees, shrubs, and bushes, as well as an abundance of grass right up to the snow-line, which is at an altitude of 16,000 feet, more or less, being higher in the dry season and lower during October and November, when it doubtless drops down to 15,000 feet for short periods. The real snow-line is well marked, however, there being not a spear of grass or vegetation of any sort above it, only bare rock and earth, but mostly rock. At 15,000 feet is the beautiful *Lake Macotama*, almost completely surrounded by naked pinnacles of rock rising to a height of from 1,000 to 1,400 feet above the lake. The lake itself is in the form of a third of a circle, about a mile long and nearly half a mile wide in places, with icy cold, crystal-clear water of a profound depth, giving it the most beautiful blue color. The Alpine lakes may be very picturesque, but it is doubtful if any can surpass this one in beauty of setting. A thousand feet above this lake is a smaller, shallow lake, which may be called *Summit Lake*. This lake is fed by the melting snow from the mountain above,

and in turn feeds Lake Macotama, the water tumbling over a nearly perpendicular wall of rock into the lower lake. Lake Macotama is the source of the river of the same name, which after leaving the lake flows northeast through a gently sloping valley more than a mile wide, extending down to 11,000 feet, where it ends abruptly in a narrow, steeply sloping valley. The banks of the stream are thickly grown up with stunted trees and shrubs, right up to Lake Macotama, as well as the shores of the lake itself, making ideal cover for birds. Above 15,000 feet bushes are very scarce and small. It is delightful roaming about over these great wastes when the sun is shining, but beware when the clouds roll up in blinding mist, for they carry a chill which penetrates the thickest clothing and searches out the very marrow of one's bones. It is astonishing to find birds so abundant at these high altitudes, although not many species are represented, and even they are as shy as deer, and often require the same amount of stalking to secure. The junior author's work in this locality was done between April 16 and 21, 1914, while Mr. Brown collected here also during his second trip to the Sierra Nevada, in February and March, 1899.

Paramo de Macotama.—As used by Mr. Brown, this name applies to the paramos on the heights to the west of the Indian village of that name, and lying at an altitude of from 11,000 to 12,000 feet. His work here was done in February and March, 1899.

Paramo de Mamarongo.—This is the name applied by Sievers to the lower paramo to the east of the village of Macotama, which extends southward to join the main backbone of the Sierra Nevada to the eastward of the Chiruqua Pass and the Snow Peaks. These paramos are, on the whole, lower, and have less water and shrubbery than the Paramos de Chiruqua, and consequently fewer birds. They were visited by the junior author in April, 1914.

Piedras.—A river in the northwest coastal section, emptying into the sea a little east of Cabo de San Juan de Guía.

Playa Brava.—A locality used by Mr. Smith, and situated at the head of a bay, about six miles northeast of Santa Marta.

Playa Concha.—See *Concha*.

Pueblo Viejo.—A village near Cienaga, on the sand-dunes near the mouth of the Cienaga Grande, where a specimen of *Atelcodacnis bicolor* was obtained by Mr. Smith's expedition in September, 1898.

Pueblo Viejo.—A village of Colombians situated on the north slope of the Sierra Nevada, at an altitude of 2,000 feet. It is nearly a two days' journey with pack-animals from the coast at Dibulla, and is just at the edge of the "Indian country," very few if any Indians living below this point. The whole country below the village, to the eastward, is still forested, except for occasional small clearings or tracts of second-growth. To the eastward lies the Chirua Valley, still wooded in many parts, while to the west and north little except grass-covered mountains can be seen. Mr. Brown collected at this point during the latter half of March, 1898. He gives the altitude of the place as 8,000 feet, which is of course a mistake, since San Antonio, farther up the valley, is only 3,700 feet above the sea. Many Sub-tropical Zone birds are recorded by him from this place, and the experience of the junior author at this same locality in March, 1914, would seem to indicate that some of the forms of this zone reach a lower level here than elsewhere in the Santa Marta region.

Pueblo Viejo.—An Indian village in the southern Sierra Nevada, on the trail from Valle de Upar to San Sebastian, mentioned by Simons. Mr. Brown also passed through it, but did no collecting at this point. (Dr. Allen, in his list of localities, has confused this Pueblo Viejo with the place of the same name on the northern slope of the mountains.)

Punto Caiman (or *Playa Caiman*).—A point on the coast of the Isla de Salamanca, on the northwest corner of the Cienaga Grande. Water birds of various kinds are abundant here, while several species of small land birds inhabit the mangroves and shrubbery. The most abundant inhabitants of all are the omnipresent mosquito and sand-fly, which make the life of a collector a misery at all hours of the day and night. The junior author collected here from September 27 to October 2, 1913, and trusts that his visit will not have to be repeated.

*Quebra*²² *Concha*.—See *Concha*.

Quebra (or *Quebrada*) *Tamocal*.—An affluent of the Rio Manzanares, rising very close to the Rio Gaira at Minca. It drains a narrow valley, the upper part of which has steep and broken slopes, but below La Tigrera it widens out considerably. Its valley and slopes are covered with semi-arid woodland and savanna, except in the immediate vicinity of the stream, where the trees are large and dense.

²² A contraction for "Quebrada."

Rancheria.—A river draining the entire eastern part of the Santa Marta region, beyond the headwaters of the Rio Cesar. It was formerly known as the Rio de la Hacha, and empties into the Caribbean Sea near the town of that name, after describing a semi-circular course through the eastern foothills of the Sierra Nevada and the plains of the Goajira Peninsula.

Rio Frio.—A river on the west slope of the Sierra Nevada, emptying into the Cienaga Grande, with a town by the same name at the place where it is crossed by the Santa Marta Railway.

Rio Hacha (or *Riohacha*).—A town of about five thousand inhabitants, situated on the coast about ninety miles east of Santa Marta, near the mouth of the Rio Rancheria. The lower course of this river marks the dividing line between the Indian territory, known as the Goajira, and the Department of Magdalena, and is well within the arid belt comprising the Goajira Peninsula. This arid region extends westward from Rio Hacha for about twenty-five miles, gradually merging into the humid forest belt between Camarones and Dibulla. The immediate vicinity of Rio Hacha is not quite typical of the conditions farther out on the Peninsula, there being more trees and less cacti in evidence, but nevertheless all, or nearly all, of the species peculiar to the arid region occur there, together with some of the semi-arid belt. Rio Hacha first figures in ornithological literature in 1847, when Lafresnaye described two new species from the Delattre collection, *Cardinalis granadensis* and *Dendroplex picirostris*, said to have been obtained there, and again in 1853, when Bonaparte published a diagnosis of his *Psittacula pyralia*, from the same source. Simons landed here in 1878, but did no collecting, nor did Mr. Brown on the occasion of his visits. The collection of birds secured here by the junior author numbers over three hundred specimens, and was made between May 1 and 7, 1914, and July 14 and 17, 1920.

Rosario.—A village in the foothills of the southern slope of the Sierra Nevada, near the headwaters of the Rio Cesar.

Salamanca.—A low, narrow strip of sandy beach, separating the waters of the Caribbean Sea from those of the Cienaga Grande, leaving a narrow passageway at its eastern end. It is covered in many parts by shrubbery and small trees, while the shores of the Cienaga are thickly grown up with mangroves.

San Antonio.—This is the name for the old Indian village which was

formerly located about two miles above Pueblo Viejo, on the north slope of the Sierra Nevada, at an altitude of 3,700 feet. It was destroyed by the Conservative army in the last Colombian revolution, because the Indians had taken up arms with the Liberals. Nothing remains today of this village, and its inhabitants were scattered among the Indian hamlets higher up in the Sierra. San Antonio is the type-locality of *Trochilus floriceps*, described by Gould in 1853, and Simons refers to it under the head of *Rhamphocalus dimidiatus*, which he took there August 28, 1878. Mr. Brown also did some collecting at this locality, in the spring of 1899.

San Francisco.—A small Indian hamlet in the valley of the Rio Ancha, a few miles above Pueblo Viejo. The lower mountain slopes on both sides are bare of forest, those on the right-hand side, indeed, being very precipitous and rocky. On the left-hand side the higher slopes are still wooded for a considerable distance. The locality appears among those at which Mr. Brown collected in the spring of 1898, but the altitude he assigns for it, 6,000 feet, is certainly entirely too high, although it appears to lie within the Subtropical Zone. Probably 4,000 feet would be nearer the truth.

San José.—"A new Indian village, built in 1874 by order of the Government, on the banks of the Guatapuri, at an elevation of 5,000 feet, is wholly composed of Indians, about 120 in number." Simons collected a few birds here on March 14 and 15, 1879, and again on June 8 and 9 of the same year, obtaining on his second visit the type-specimen of *Basileuterus conspicillatus*.

San Juan de Cesar.—A village near the head of the Rio Cesar Valley, along the road from Fonseca to Valle de Upar.

San Juan de Guía.—See *Cabo de San Juan de Guía*.

San Lorenzo (de Santa Marta).—The name of an immense semi-isolated mountain mass, lying to the northwest of the main Sierra Nevada range, with which it is connected by a ridge having a minimum altitude of about 5,000 feet. The whole mountain (except the western end), down to the lower edges of the foothills, is covered with forest, heavier and more humid on the east and south exposures. The crest is in the form of a sharp ridge running nearly west and east for several miles, and then swinging off to the northward. The eastern part of the ridge attains a height of 9,300 feet, while the western end, known as the Cerro Quemado, is a thousand feet less. Almost all the

collecting done by Mr. Smith and by the junior author has been on the Cerro Quemado and western slopes, the eastern part, however, having been worked from October 31 to November 4, 1920. The locality "San Lorenzo," as used by Mr. Smith, refers to a point on the Cerro Quemado some eight miles by trail from Cincinnati. Most of the birds so labelled were taken 500 to 1,500 feet below the summit at that point; they were shot in May, 1899. The junior author has also done considerable collecting at intervals in this same part, working right up to the summit, where he succeeded in detecting a number of species with which Mr. Smith did not meet, among others a fine new species of *Hemispingus*.

San Miguel.—The largest village, and one might say the headquarters today of the Arhuaco Indians of the Sierra Nevada. It is situated on the right bank of the Rio Macotama as one ascends, at an altitude of 5,500 feet, on a small bench jutting out from the side of the mountain two hundred feet above the river. The mountain rises abruptly behind it to the west to an elevation of not less than 9,000 feet, and is entirely bare of woodland. Opposite the village, and a little lower down, is a larger plateau, extending farther up the river. Here the Indians have numerous small farms, where they raise sugar-cane, sweet potatoes, yucca, bananas, platinos, aracache, onions, etc., while the side on which the village lies is given over to pasture for their cattle. The mountain also rises very abruptly on the left side, and is wooded from the plateau up to near the crest, which is overgrown with shrubbery and huge bromelias. This wooded slope extends up along the river past Macotama to a point where the river swings abruptly westward toward the Snow Peaks, where it is replaced by grassy slopes, which run right up to the paramos. Mr. Brown made San Miguel his headquarters for some time on both his trips to these mountains. The junior author used it as a base for all the work done on the heights above, on the Cerro de Caracas, in March and April, 1914. The village itself lies in the Subtropical Zone, while the mountains on either side reach upward into the Temperate and Paramo Zones.

San Salvador.—A river on the north slope of the Sierra Nevada, between the Rio Palomina and Rio Ancha. There may be a village of the same name, since Sharpe records a specimen of *Setophaga verticalis* collected by Simons at such a locality, but its position is not known.

San Sebastian.—More properly *San Sebastian de Rabago*, which is "a beautiful little Indian village, of 700 inhabitants, surrounded by a wall, and lies in a valley on the banks of the Rio de la Fundación, 6,700 feet above sea-level. With a climate cool enough to grow wheat and other products of temperate regions, and unlimited water power, it will some day more than likely become an important place through immigration, as it is well adapted for Europeans." Simons apparently did more collecting here than at any other point in the southern part of the Sierra Nevada, visiting it repeatedly during 1878 and 1879, and securing among other Subtropical Zone species the types of *Pacilothraupis melanogenys* and *Buarremon melanocephalus*, described by Salvin and Godman, and of *Synallaxis fusciorufa*, described by Sclater in 1882. Mr. Brown made San Sebastian his headquarters for about six weeks in 1899, from the end of June until the first part of August. He describes the village as "situated on a level plateau or plain with mountains on either side. Through this plain flows the San Sebastian River, along which there are woods, with woods also on some of the slopes and ridges. There is also considerable scrubby growth near the village, where I collected several species of hummingbirds, as well as Giant Thrushes and other interesting birds and mammals. But on the whole the country is open and covered with grass, affording excellent pasture for cattle, goats, and sheep. I spent six weeks or more at San Sebastian, but was greatly handicapped by the lateness of the season, the birds being in poor plumage." The only novelty obtained by Mr. Brown on this trip was a new species of hummingbird, *Acestrura astreans*.

Santa Cruz.—A tiny Indian hamlet on the left bank of the Rio Macotama (as one ascends), midway between Pueblo Viejo and San Miguel, with an altitude of approximately 3,000 feet (not 8,000 feet, as erroneously stated in Dr. Allen's list of localities). Numerous specimens collected by Mr. Brown in the spring of 1899 bear labels with this locality on them.

Santa Marta.—A city of about ten thousand inhabitants, the capital of the Department of Magdalena, beautifully situated on one of the finest bays along the coast, and with the best harbor in Colombia, easy of access, well sheltered, and deep enough for the largest vessels afloat. The immediate vicinity is a semi-arid region, with little rainfall as a rule, where irrigation is the only sure method of raising any

kind of crops. The natural vegetation of this part consists of thorny scrub and various species of trees, mostly deciduous, peculiar to this semi-arid belt, besides various species of cacti in abundance. A flat plain extends eastward from the town (along the Rio Manzanares) for a distance of about five miles, a large portion of which is under irrigation and mainly devoted to pastures. To the north of this plain are rugged hills extending down the coast to the eastward as far as the Rio Piedras, while to the south are the foothills of the San Lorenzo. Although Santa Marta figures as a locality for a number of species as far back as 1853, when Sclater and Bonaparte described certain new forms said to have come from there, there is no certainty that any of these actually came from the immediate vicinity of the town; in fact, we know now (compare remarks on page 22) that some of these old records are absolutely wrong, and others open to question. The first Santa Marta records beyond suspicion are those pertaining to a few species of birds noted by Wyatt on December 22, 1869, during a few hours' sojourn in the place. Next came Simons, who landed here in December, 1878, and remained in this region and its vicinity at least until April of the following year. Mr. Brown collected a few specimens "within five miles of the town" on the eve of his departure for Rio Hacha in February, 1898, but as nearly all his material from Bonda and beyond was also labelled "Santa Marta" it is impossible to separate these specimens except by the dates of collection, and no effort has been made to do this in compiling the present paper. The comparatively few specimens so labelled by Mr. Smith are of course authentic, as are also those sent in by the junior author, collected from May 15 to 17, 1913.

Santa Rosa.—A tiny Indian hamlet on the Rio Macotama, a few miles below the point where the trail from Pueblo Viejo enters the Macotama Valley. Its altitude is not known exactly, but must be somewhere around 2,000 feet.

Sierra del Libano.—See *El Libano*.

Sierra Nevada de Santa Marta.—The name applied to the entire mountain system of this region, fully described on page 7. As used by Simons on the labels of some of his specimens, it applies to certain points lying at the altitudes indicated on the southern slope of the mountains, near the headwaters of the Rio Guatapuri, by which route Simons ascended in July, 1878, crossing the Paramo de Chiriqua and

descending the north slope. A specimen of *Diglossa aterrima*, however, dated June 30, 1878, may have been taken on his first trip from San Sebastian to the Sierra, on which he failed to get across. The junior author has also used the locality "Sierra Nevada" on the labels of his specimens in a restricted sense for want of a better designation. His numbers from 10,762 to 10,840, between March 19 and April 5, 1912, were thus labelled with the altitude added; they were all taken on the crest or near it on both slopes of the ridge which connects the San Lorenzo with the main mass of the Sierra Nevada, just behind the former, where conditions are the same, namely, virgin, unbroken, Subtropical Zone forest.

Snow Peaks.—See *Paramo de Chiruqua*.

Summit Lake.—See *Paramo de Chiruqua*.

Taganga.—(Misspelled "Tayanga" in Dr. Allen's list). A fishing village situated at the head of the bay of the same name, being the next indentation on the coast to the north of the harbor of Santa Marta. The coast at this point is generally rocky and precipitous, with numerous caves; back of the village there are rocky hills running up to 500 feet. The character of the vegetation is the same as at Santa Marta. The name occurs on the label of a specimen of *Crossophthalmus gymnophthalmos* sent in by Mr. Smith.

Taquina.—A small Indian hamlet on the right bank (as one ascends) of the Rio Macotama, between San Miguel and Macotama, at an altitude of 6,000²³ feet. It is situated on a large grass-covered plateau just above the junction of the Rio Macotama with a small stream coming in from the north, which the Indians call "Siquaiin" (pronounced "Sē-kī-ēn"). Its valley is narrow, with abruptly rising grass-clad slopes on either side. The intention of the junior author was to ascend this stream to its source, said by the Indians to be a lake lying off in the direction of the Snow Peaks, but this intention had to be foregone for lack of time. A few birds were collected at this point on March 29, April 6 and 9, 1914. Mr. Brown, oddly enough, does not use the name at all.

Templado.—An Indian plantation on the east slope of the southern Sierra Nevada, lying at an elevation of 5,700 feet, about seven miles northeast of San Sebastian. When Mr. Brown had his headquarters

²³ 7,021 feet, according to Sievers.—W. E. C. T.

at the latter place in the summer of 1899 he had a native hunter collect some birds for him at Templado.

Tierra Nueva.—A point on the Aracataca River some five or six miles above its mouth at the Cienaga Grande. It is the first high ground met with in ascending the river, that is, ground which is not submerged by the overflow from the Cienaga during the rainy season. Only one trip (October 12, 1913) was made to this point by the junior author, and it was the first of the two places where he succeeded in detecting *Helcodytes nuchalis*. The whole region is heavily forested.

Treinta.—A dilapidated village, well up in the edge of the foothills, on the trail from Rio Hacha to Fonseca, and about halfway between these two points.

Trojas de Cataca.—A small, unique fishing village on the edge of the Cienaga Grande at the mouth of the Aracataca River. The houses are all built on piles driven into the mud in four to five feet of water. The inhabitants subsist entirely by fishing, no cultivation being possible on the shores of the Cienaga for miles inland. It is reached only by sail-boat from Pueblo Viejo or Cienaga. Few land birds are present in the flooded forest of the shore, but water birds of many kinds are abundant along the mangrove-lined shores and up the rivers emptying into it. The birds collected here by the junior author were taken from October 5 to 13, 1913.

Tucurinca.—A banana-plantation belonging to the United Fruit Company, situated on the Santa Marta Railway, in the alluvial lowlands east of the Cienaga Grande. A large river of the same name, one of the affluents of the Rio Aracataca, and which rises in the Snow Peaks of the Sierra Nevada, flows through the plantation. The conditions here are very similar to those at Fundación, and the bird-fauna is the same. Most of the collecting done here (between September 15 and 24, 1915) by the junior author was in the forest below the plantation, under typical lowland conditions.

Valencia.—More properly *Valencia de Jesus*, a town in the valley of the Rio Cesar, on the road leading southwestward to the Magdalena, about seventeen miles from Valle de Upar. It is given by Simons as a collecting station for several species of birds obtained by him in May, 1879. The junior author made collections a few miles to the westward of this place on August 6 and 7, 1920.

Valparaiso.—The old Spanish name for the hacienda on the west slope of the San Lorenzo now known as *Cincinnati*. In the present paper the older name has been retained to designate specimens collected at this point by Mr. Smith's expedition. (See *Cincinnati*.)

Valle de Upar.—(Often incorrectly spelled "Valle Dupar"). A town in the lower valley of the Rio Guatapuri, 700 feet above the sea. "On the northwest the snowy regions of the Nevada are plainly visible, while on the east and southeast the wooded slopes of the Andes rise like a wall." Simons, from whom this quotation is taken, spent considerable time in this region in 1878 and 1879, if one may judge correctly from the dates attached to his specimens as given by Salvin and Godman. Valle de Upar is also notable as the type-locality of *Furnarius agnatus* and *Ortalia ruficrissa*, obtained by Mr. G. Joad, F. Z. S., in 1870.

"Vista Nieve".—The name of the hacienda or plantation of the junior author, situated on the south flank of the Cerro Quemado, southeast of Cincinnati, at an altitude of 4,000 feet.

LIST OF SPECIES.

As in previous papers on neotropical birds by the authors, the classification here adopted is that set forth by Mr. Ridgway in his "Birds of North and Middle America," but the actual sequence of the species has been reversed, so as to bring it into accord with present-day usage, while the groups not treated by that author have been arranged accordingly. Such species as do not seem to be properly authenticated as birds of this region are inserted in their proper places, but are printed in smaller type, and without a number prefixed. For reasons stated elsewhere, the records by earlier authors have not been accepted unless supported by later authentic work. The references under each species are strictly confined to those bearing upon the region as here restricted, and all of them have been personally verified by the senior author. In every case the page quoted is that where the *name* occurs. Different spellings of the same name, as a rule, do not appear under separate heads.

The localities are not specified under every reference, being covered by the expression "Santa Marta references and localities." The names of localities are given in corrected form; in the list of specimens under each species they appear usually, but not invariably, in the order

in which they were visited by the collector. The category of "Additional Records" refers to specimens in other collections, for which there are no other records for the localities specified. Measurements, where given, are all in millimeters, and unless otherwise stated the length of the bill is that of the exposed culmen. Free use has been made of Mr. Ridgway's *Color Standards and Color Nomenclature* in discussing color variations and in preparing descriptions.

Much time and thought have been given, in preparing the present list, to a technical treatment of the various species, with the object in view not only of determining the proper names to be used, but also of reaching correct conclusions as to status and relationships in many doubtful cases. Often this has involved extended research and much detailed work, but it is believed that the results attained have well been worth the trouble, since thereby the actual affinities of many obscurely known forms have been made known and their faunal position indicated. In a limited number of cases the taxonomic history of certain species has been given at some length, and it is hoped that this feature of the list will not be the least useful to other workers in this field. In matters of nomenclature the authors frankly admit the lack of uniformity in dealing with such disputed questions as the treatment of genera, the relative value of subspecies, and the form of certain names used in a specific sense. With regard to the first question at issue we have as a rule followed Mr. Ridgway so far as he has gone in his great work, although not fully assured that a more conservative course may eventually be found desirable. The aim has been to follow the International Code so far as we are able to interpret it, but there seem to be some cases which it does not cover. Vernacular names have been omitted, except under the families. The subject matter under most of the species is arranged in two headings, one of the authors being responsible for each respectively.

Family ANHINGIDÆ. DARTERS.

1. *Anhinga anhinga* (Linnæus).

One specimen: Palenque.

This bird is entered on the list on the strength of a single specimen sent in by Mr. Smith, and collected at Palenque, between Bonda and Mamatoco, March 5, 1899. It has been seen near the mouth of the

Rio Fundación by the writer, and must occur in the Cienaga Grande also.

Family PHALACROCORACIDÆ. CORMORANTS.

2. *Phalacrocorax vigua vigua* (Vieillot).

Phalacrocorax vigua ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 124 (Bonda).

Phalacrocorax vigua vigua CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 236 (Cienaga).

Three specimens: Bonda and Trojas de Cataca.

This cormorant is a very abundant bird on the Cienaga Grande, at times ascending the various streams leading into it for a short distance, or working along the coast as far as Santa Marta. Mr. Smith's collectors secured specimens at Bonda in July and November. A few were seen by the writer at Rio Hacha in July, 1920.

Family PELECANIDÆ. PELICANS.

3. *Pelecanus occidentalis* Linnæus.

Pelecanus fuscus? WYATT, Ibis, 1871, 115 (Cienaga).

Pelecanus occidentalis TODD, Ann. Carnegie Mus., X, 1916, 173 ([Santa Marta region], Colombia).

One specimen: Buritaca.

The Brown Pelican is common all along the coast from Rio Hacha clear around to the Cienaga Grande. It appears to be most abundant, however, along the stretch of coast between Gaira and the Cienaga Grande. Although it may on occasion enter the latter, the writer cannot recall ever having seen it there, but always outside at sea. It has been seen roosting in the trees along the coast near Donjaca, and even along the railroad, often remaining while trains were passing. Its breeding grounds in this region are not known, but probably they are on some retired stretch of coast between the town of Cienaga and the mouth of the Magdalena River.

Family ARDEIDÆ. HERONS.

4. *Ixobrychus erythromelas* (Vieillot).

Two specimens: Fundación.

An adult and an immature female were taken in the marsh at Fundación on October 13 and 14, 1915, and two other individuals were seen.

They were evidently breeding here, as the old female had eggs the size of No. 4 or 5 shot in the ovary. The female differs conspicuously from the same sex of *I. exilis* in having the under surface plain, and the upper parts strongly tinged with vinaceous. The young bird, however, is streaked below, although not so heavily as the other species, and the back is mottled with dusky centers and buffy edgings to the feathers. The species has an extensive range in tropical South America, reaching Paraguay on the south and Trinidad and Guiana on the east.

5. *Ardea herodias* subsp.

One specimen: Bonda.

The specimen in question is dated November 16, 1898. It is a young bird, indistinguishable from northern examples in the same stage. Our available material is not sufficient to justify any discussion of the status of the supposed form *lessonii*, revived by Dr. Oberholser (*Proceedings U. S. National Museum*, XLIII, 1912, 555) for the Great Blue Heron of Mexico, Central America, and northern South America, beyond observing that a fine adult from Costa Rica is indistinguishable from specimens from the eastern United States.

This heron has been noted by the writer at Punto Caiman and elsewhere about the Ciénaga Grande,²⁴ but not anywhere around Santa Marta or along the coast to the eastward. It is not abundant, and is moreover very shy, flushing at long distances.

6. *Doriponus agami* (Gmelin).

Ardea agami SALVIN and GODMAN, *Ibis*, 1880, 178 (Santa Marta).

Agamia agami SHARPE, *Cat. Birds Brit. Mus.*, XXVI, 1898, 135 (Santa Marta).—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 125 (Mamatoco and Bonda).

One specimen: Bonda.

A species with a wide distribution in Central and South America, and which has been recorded from our region on several occasions, as above. Two individuals were noted near Punto Caiman on one occasion by the junior author.

²⁴ There is a possibility that some of these records may refer to the allied species, *Ardea cocoï*.—W. E. C. T.

7. **Hydranassa tricolor ruficollis** (Gosse).

Hydranassa tricolor tricolor (not *Ardea tricolor* Müller) ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 275 (Don Diego).

Hydranassa tricolor ruficollis COOKE, Bull. Biol. Survey, No. 45, 1913, 51 (Don Diego, ex Allen)

Additional records: Cienaga (Univ. Mich. Exp.).

Three specimens: Don Diego and Gaira.

As these are all in immature plumage they are not determinable as to subspecies, but are probably referable to *ruficollis*, since the typical form, so far as we know, is restricted to the Guianas and Brazil.

A pair of Louisiana Herons were taken in a swampy pasture near Gaira, September 11, 1913. Mr. Smith's collectors secured two specimens at Don Diego, May 5 and 9, 1901, and the University of Michigan Expedition secured two more at Cienaga in August, 1913. Evidently it is rare in this section.

8. **Florida cærulea** (Linnæus).

Ardea cærulea WYATT, Ibis, 1871, 384 (Cienaga).

Florida cærulea TODD, Ann. Carnegie Mus., X, 1916, 179 ([Santa Marta region], Colombia; crit.).

Additional records: Gaira (Carriker).

Fourteen specimens: Bonda, Cinto, Trojas de Cataca, and Punto Caiman.

In the paper last cited the writer has given reasons for declining to recognize a southern subspecies *cærulescens*. Since this was written Cayenne examples have come to hand; they prove to be inseparable from either Colombian, West Indian, or Florida birds, and confirm the conclusions already reached.

The Little Blue Heron is the most abundant of its family in this whole region, and is found throughout the littoral Tropical Zone wherever there is a little water, from Santa Marta to Fundación, and also to the eastward as far at least as Dibulla.

9. **Pilherodius pileatus** (Boddaert).

Two specimens: Cinto and Tucurínca.

Mr. Smith's collection contained one fine adult of this species, which he said was taken at Cinto (the label having inadvertently been left blank). This appears to be the first specimen of this beautiful heron ever collected in Colombia. A second specimen was shot by the

writer below Tucurinca, near a lagoon in the forest, September 20, 1915. This example lacks the long plumes of the crown, and is probably immature, or at least in non-breeding dress.

In July, 1920, one was seen on the flood-plain of the Rio Badillo and another on the flood-plain of the Rio Guatapuri near Valle de Upar. The species has an extensive range in tropical South America, but does not appear to be common anywhere.

10. *Butorides virescens virescens* (Linnæus).

Butorides virescens ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 125 (Bonda).—ALLEN, Auk, XVII, 1900, 364 (Bonda).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 275 (Bonda).—TODD, Ann. Carnegie Mus., VII, 1911, 410, in text ([Santa Marta region], Colombia; crit.).

Butorides virescens hypernotius OBERHOLSER, Proc. U. S. Nat. Mus., XLII, 1912, 549 (Mamatoco and Bonda; crit.).

Nine specimens: Bonda, Playa Concha, Trojas de Cataca, and Fundación.

The five adults, together with a few specimens from other regions, measure as follows:

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Tarsus.
8958	♂	Bonda, Colombia.....	185	70	61	53
9204	♂	Playa Concha, Colombia.....	186	71	62	52
43259	♀	Trojas de Cataca, Colombia.....	190	71	61	48
43290	♂	Trojas de Cataca, Colombia.....	187	70	64	49
49651	♀	Fundación, Colombia.....	182	64	63	52
23874	♀	Cuabre, Costa Rica.....	175	63	63	50
28332	♀	El Pozo de Terraba, Costa Rica.....	172	63	60	49
Eight adult males from eastern U. S., average.....			179	65	61	51

According to the latest authority on the subject these specimens should belong to the race *hypernotius*, described as being practically the same as typical *virescens* in color, but differing therefrom in smaller size. As may be seen from the above table of measurements, our Colombian birds at least actually average larger, if anything, than northern specimens, which they closely resemble in color. As they were all taken in October and December, it is possible that they are merely winter resident individuals from farther north. But whether this be true or not, we certainly cannot see our way clear to the recognition of a subspecies *hypernotius* on such slender characters.

The Green Heron seems to be less common here as a rule than *B.*

striatus, although at Fundación the two species were apparently more evenly divided.

11. *Butorides striatus* (Linnæus).

Butorides cyanurus SALVIN and GODMAN, Ibis, 1879, 206 (Santa Marta region, exact locality omitted).

Butorides striata SHARPE, Cat. Birds Brit. Mus., XXVI, 1898, 175 (Valle de Upar).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 125 (Bonda).

Fifteen specimens: Mamatoco, Bonda, Santa Marta, Fundación, Trojas de Cataca, and Don Diego.

Having been able to examine in this connection a large series of specimens of this species, the property of several different institutions, we have reached the conclusion that no satisfactory subdivision of the species is possible. It is true that there is a great deal of variation in color, especially affecting the back and neck, but these variations are certainly not correlated with locality, and some of them are probably indicative of a tendency to dichromatism, to which so many members of this family are peculiarly susceptible. In what appears to be the normal phase the sides of the head and neck are practically pure pearl gray, with little or no brownish wash. From this condition individuals vary all the way to birds in which these parts are strongly washed with vinaceous brown. It was an individual in this extreme phase which constituted the type of *Butorides robinsoni* Richmond (*Proceedings U. S. National Museum*, XVIII, 1896, 655), but the occurrence of similar birds in Venezuela and Peru (as shown by the series examined) would seem to preclude the possibility of this being anything more than a color-phase.

This little heron is a common bird all through the lowlands, wherever there are streams or marshes of fair size.

12. *Tigrisoma lineatum* (Boddaert).

Tigrisoma lineatum CARRIKER, Ann. Carnegie Mus., VI, 1910, 433 ([Santa Marta region], Colombia; crit.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 231, in text ("Santa Marta"; crit.).

Nine specimens: Don Diego, Las Vegas, Fundación, and Trojas de Cataca.

Our series of this tiger bittern (which includes eight specimens from other parts, besides the above) shows that there are three distinct plumages, apparently dependent on age. First, there is the barred buff

and black dress of the juvenal stage, already well described. In the next stage (represented by No. 9,339, Don Diego) the bird resembles the adult in general, but the markings of the upper parts and neck are coarser, and the lower breast and tibiae are more or less conspicuously barred with black and buffy. It was an individual in this stage, apparently, to which Mr. Ridgway gave the name *Tigrisoma excellens* (*Proceedings U. S. National Museum*, X, "1887," 1888, 595). Finally, there is the fully adult bird, fitting the published descriptions.

This species is found in the Tropical Zone of this region, from sea-level up to 3,000 feet, but is confined to the forest along the streams. It is most numerous along the Cienaga Grande, in the mangroves and inundated forest, but is rare in the hills.

13. *Tigrisoma salmoni* Sclater and Salvin.

Tigrisoma salmoni SALVIN and GODMAN, *Ibis*, 1880, 178 (Minca).—SHARPE, *Cat. Birds Brit. Mus.*, XXVI, 1898, 197 (Minca).—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 125 (Valparaiso).

One specimen: La Tigrera.

Simons secured an adult of this tiger bittern at Minca on January 22, 1879, but when he speaks of the abundance of the bird on the Magdalena River he probably refers to the other species, *T. lineatum*, which seems to be more of a lowland form than *T. salmoni*. The only specimen secured by the writer was shot at La Tigrera, May 10, 1913. Mr. Smith's collector secured a single immature example at Valparaiso (Cincinnati) in April, 1899. An individual was seen here also by the writer in March, 1914, and another at Las Taguas (at 5,000 feet) in June, 1919. They were on boulders in swift mountain streams running through dense forest.

14. *Nycticorax nycticorax nævius* (Boddaert).

Nycticorax nycticorax nævius ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 125 (Bonda).

Seven specimens: Bonda and Mamatoco.

A flock of about a dozen Black-crowned Night Herons was met with in the marshes near the village of Mamatoco on May 22 and 23 and August 1 and 2, 1913, when adults and young were secured. Mr. Smith sent in two adults from Bonda, May 1 and June 10, 1899. No. 42,612, a young bird in juvenal plumage (August 2) cannot be matched in a considerable series, its back being much more deeply rufescent,

and devoid of white spotting. No. 42,597, an adult, is grayer below and under the wings than is usual, with the remiges and rectrices darker also, thus suggesting *N. tayazu-guira*.

A few were noted at Rio Hacha in July, 1920, in the mangroves along the river.

15. ***Nyctanassa violacea violacea*** (Linnæus).

Seven specimens: Bonda, Mamatoco, Don Diego, and Gaira.

Three adults and four young birds are included, the latter bearing dates in January, April, and May. A fine adult was shot by the junior author September 11, 1913, in a marshy tract near the village of Gaira; the remaining birds were all taken by Mr. Smith's collectors. The species is known from the coast of Venezuela, Guiana, and Brazil, as well as from Panama and Peru, but this appears to be the first record for Colombia. Surinam specimens have lately been separated by Messrs. Bangs and Penard (*Bulletin Museum of Comparative Zoölogy*, LXII, 1918, 31) under the subspecific name *cayennensis* of Gmelin, on the ground of smaller size and darker coloration, but we can find no reason for referring our series to this supposed form, although there is, to be sure, considerable variation in color, the same as in North American specimens.

16. ***Cochlearius cochlearius*** Linnæus.

Cancroma cochlearia ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 124 (Minca and Bonda).

Six specimens: Mamatoco and Trojas de Cataca.

Variation in this species affects the length of the crest, the color of the lower mandible (which may be black or yellow), the color of the flanks (which runs from black to a decided bluish shade), and the color of the mantle, which in some individuals is much darker gray than in others. We are not prepared to accept the subdivision of this species recently proposed by Messrs. Bangs and Penard (*Bulletin Museum of Comparative Zoölogy*, LXII, 1918, 31), however, for the reason that some of our Colombian specimens are nearly up to the measurements of the Rio Janeiro example referred to by these authors.

A few were found in the marsh near Mamatoco, in company with Black-crowned and White-crowned Night Herons. Mr. Smith reported the species from Minca, which is a most unusual record, as it is rarely found so far above sea-level. It is found sparingly along the

shores of the Ciénaga Grande (at least on the upper part, where the water is fresher), as well as along the lower reaches of the large streams flowing into the Ciénaga.

Family PLATALEIDÆ. SPOONBILLS.

17. *Ajaia ajaja* (Linnæus).

Two specimens: Neguange and Punto Caiman.

A flock of about fifteen Roseate Spoonbills was repeatedly seen along the beach at Punto Caiman in September, 1913, one of which was secured. It is fairly common in the region of the Ciénaga Grande. Mr. Smith sent in a single specimen from Neguange, dated November 2, 1899. One was seen flying over at Rio Hacha in July, 1920.

Family THRESKIORNITHIDÆ. IBISES.

18. *Theristicus caudatus* (Boddaert).

On all the extensive savannas around Camperucho, often at the very roadside, many small bands of this handsome ibis were encountered by the junior author on the occasion of his visit to this locality in early August, 1920. They appeared to be feeding on the grasshoppers and other insects so abundant there. Although no specimens were actually taken, there can be no reasonable doubt of the identification under the circumstances. This is the first record of the occurrence of the present species in the Santa Marta region.

19. *Phimosus berlepschi* Hellmayr.

Eight specimens: Fundación.

Our only specimen of this form from the Orinoco region of Venezuela (the type-locality) is unfortunately immature; it is precisely similar to No. 42,913 of the above series. Only two of the series are fully mature birds, fitting the description as it stands; the others are in various stages of immaturity, ranging down to young birds covered with black down, but with the face bare even at this early age, and the new feathers of the wings, tail, and back just sprouting.

A colony of perhaps twenty pairs of this ibis was discovered in the marsh at Fundación. Here they remain through the year, feeding in the surrounding pasture-lands as well as in the marsh itself, and building their nests in the small stunted trees within the matted growth

of wild plantains in the middle of the marsh. On the occasion of the writer's first visit to Fundación, in August, 1913, only a few pairs were found, with one nest under construction, but in October of 1915 the colony had increased to at least twenty pairs. Numerous nests were found, some with newly hatched young, others with young nearly fully fledged or about ready to fly. Five nests with eggs were found: one with one egg, one with two, two with three, and one with six. The nest is a rude platform of sticks, nearly flat, and very small for the size of the bird, not exceeding twelve or fourteen inches in diameter. The eggs are light greenish blue, like those of a heron.

Family CICONIIDÆ. STORKS.

20. *Mycteria americana* (Linnaeus).

Two specimens: Cacagualito and Fundación.

A single immature Wood Ibis was shot in the forest on the banks of the river above the town of Fundación, August 15, 1913. Two others were seen in a tract of woodland near the marsh, but could not be secured. The Cacagualito specimen forwarded by Mr. Smith was collected in May, 1898.

Family ANATIDÆ. DUCKS, GEESE, SWANS.

Merganetta colombiana Des Murs.

Merganetta columbiana SALVADORI, Cat. Birds Brit. Mus., XXVII, 1895, 462 ("Santa Marta").

There is an alleged Santa Marta specimen of this duck in the Salvin-Godman collection, now in the British Museum, as above recorded. Dr. Chapman speaks of the species as not uncommon in the Subtropical Zone of the Central Andes, and it may very well be that its range includes the Santa Marta region also; but pending the receipt of more definite information we think it wise to keep the species on the hypothetical list.

21. *Dendrocygna discolor* Sclater and Salvin.

Dendrocygna autumnalis (not *Anas autumnalis* Linnaeus) SCHLEGEL, Mus. Pays-Bas, VI, 1866, 92 ("Santa Marta").

Dendrocygna discolor SCLATER and SALVIN, Proc. Zool. Soc. London, 1876, 375 ("Santa Marta").

Four specimens: Fundación and Tierra Nueva.

The relationship of this form with *D. autumnalis* is so close as to have induced some authors to consider them conspecific. Our speci-

mens differ from two others from eastern Venezuela in their more rufescent breast, but are essentially matched by a third from the same region.

In August, 1913, this duck was fairly abundant at Fundación, frequenting the river and the marshes, particularly the latter. In October of 1915, however, very few were seen. A female taken at the time was apparently breeding. Along the shores of the Cienaga Grande it was not an uncommon bird, as well as up the Aracataca and Fundación Rivers, seeming to prefer the fresh water of these streams to the brackish waters of the Cienaga. The species has twice been recorded from this region, as above noted; the record by Sclater and Salvin being based on a specimen in the Berlin Museum attributed to Deppe.

22. *Querquedula cyanoptera* (Vieillot).

Querquedula cyanoptera SCLATER, Proc. Zoöl. Soc. London, 1855, 164 ("Santa Marta").—SCLATER and SALVIN, Proc. Zoöl. Soc. London, 1876, 384 ("Santa Marta").

Both of the above references pertain to specimens sent in to Verreaux, and would have to be received with caution in the absence of any other evidence. The junior author refers to it as "often seen" on the Cienaga Grande, and Dr. Chapman records it as abundant in the Cauca Valley, so that there is no reason to doubt the occurrence here under the circumstances.

Family VULTURIDÆ. AMERICAN VULTURES.

23. *Sarcorhamphus papa* (Linnæus).

Sarcorhamphus papa SCLATER, Proc. Zoöl. Soc. London, 1855, 134 ("Santa Marta").

Gypagus papa BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 92 (Paramo de Macotama, Chirua, and La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (Bonda).

Two specimens: Bonda and Minca.

The King Vulture is found in small numbers over the entire region, according to Mr. Brown up to 11,000 feet. The writer, however, has never seen it above 5,000 feet.

24. *Cathartes aura aura* (Linnæus).

Cathartes aura SALVIN and GODMAN, Ibis, 1880, 178 (Santa Marta).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (Salvin and Godman's reference).

Cathartes aura aura TODD, Ann. Carnegie Mus. X, 1916, 191 (Mamatoco; crit.).

One specimen: Mamatoco.

"This [specimen (a female)] measures as follows: wing, 502; tail, 257; tarsus, 65. It is absolutely the same as northern birds in color, and exceeds several of them in size. Although the series of this species at hand for study is admittedly small, it leaves the impression that the characters relied on to distinguish the two supposed races are too slight and inconstant to justify any such formal separation. At any rate, not one of the individuals measured is as large as those referred to by Mr. Nelson, although several are in fine fresh plumage. No Brazilian skins have been seen; they are said to be decidedly smaller."

The Turkey Vulture is a common bird over most of the region under discussion, except that it is more abundant in the higher than in the lower altitudes, as a rule entirely replacing the Black Vulture above 5,000 feet. It is by no means so common a bird as the other, is shyer, and is not seen so much around towns and houses.

25. *Coragyps urubu* (Vieillot).

Catharista urubu brasiliensis ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 275 (Bonda; crit.).

Two specimens: Bonda.

By the decision of the International Commission on Zoölogical Nomenclature (*Smithsonian Institution Publication* No. 2256, 1914, 147-9) *Catharista* falls as a synonym of *Cathartes*, and it is necessary to use *Coragyps* Le Maout.

These are a trifle smaller than North American specimens, but are not otherwise different, and the desirability of separating them is not evident.

The Black Vulture is an abundant bird everywhere in the vicinity of towns, and appears as if by magic in all kinds of out-of-the-way places whenever an animal dies. They are sluggish in their movements, and very tame, hardly moving from beneath one's feet at times. Here, as elsewhere in their range, they are extremely beneficial by removing all decaying animal matter, as well as much vegetable refuse. In most tropical countries they are protected by law. It is a mystery where they nest in this section. In Costa Rica the writer has seen young on the house-tops, and presumably the birds may breed in such situations here as well, but up to date he has not met with a single nest or young bird.

The question here raised by the junior author is answered, at least in part, by a set of two beautifully marked eggs received from Mr. Smith, collected at Taganga on July 12, and accompanied by a pencil sketch of the cave in which they were found. The eggs were laid on the bare rock, in accordance with the usual habits of this species.

Family ACCIPITRIDÆ. HAWKS.

26. **Chondrohierax uncinatus uncinatus** (Temminck).

Leptodon uncinatus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Bonda).

Fifteen specimens: Bonda, Mamatoco, and Chirua.

The variations in plumage in this species are most perplexing, not being susceptible of interpretation on any one basis. Mr. Ridgway long ago (*Bulletin U. S. Geological and Geographical Survey of the Territories*, II, No. 2, 1876, 156) described the plumage of the several stages of the bird in its progress from youth to maturity, all of which stages are represented in our series. The youngest individuals appear to be those with brown upper parts, barred under surface, and many-barred tails. As the bird grows older the upper surface changes to slaty gray, the barring of the under parts becomes less pronounced, and the bars on the tail are reduced in number and correspondingly increased in width. In very old birds the entire plumage is uniform slaty, including the wings, while the tail shows only two light bars, a broad one about the middle of the feathers and a narrow one at their tips. We have one specimen (No. 8,650, Bonda, April 10) showing the moult from the brown-backed to the slaty-backed dress, and thus far the sequence of plumages seems natural and orderly enough, although it is impossible to say how long the full change requires. But the matter is complicated by melanism, as Mr. Ridgway has shown, and also, as we believe, by albinism and erythrism. There are two specimens of our series (one from the interior of Colombia), both apparently young birds (judging from their tails), which are white below, varied only with a few dusky and rufescent bars. On the other hand, there are four specimens with tails precisely like that of the subadult stage above described, but which show no sign whatever of slaty above, and are otherwise indistinguishable from younger birds. One of the four (a female) is further remarkable for its large size (wing, 313; tail, 193) and heavily barred and strongly rufescent under parts. It is

very probable, therefore, that this erythristic phase of plumage is more or less independent of age; at any rate, only one of the young birds in the present series shows this condition in its extreme development.

According to the experience of the writer this hawk is a rare bird, to be found only in the more open woodland and savannas where there are some scattering trees. Mr. Smith's specimens were all taken at Bonda.

27. *Odontiorchis palliatus* (Temminck).

Leptodon cayanensis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Masinga).

Two specimens: Bonda and Cinto.

On the generic distinctness of this form as compared with *Chondrohierax uncinatus* see Ridgway, *Bulletin U. S. Geological and Geographical Survey of the Territories*, II, No. 2, 1876, 156, where the old names for the genera are used. The present species ranges westward along the coast from Guiana to Costa Rica, but there appear to be only a few records for Colombia. Mr. Smith sent in three specimens, one of which has already been recorded by Dr. Allen, while the other two (both adults) are now in the collection of the Carnegie Museum.

28. *Gampsonyx swainsoni* Vigors.

Gampsonyx swainsoni GURNEY, Ibis, 1879, 331, in text ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Bonda).

Gampsonyx swainsoni leona MILLER and GRISCOM, Am. Mus. Novit., No. 25, 1921, inserted page ("Santa Marta"; crit.).

Seventeen specimens: Bonda, Gaira, Mamatoco, Dibulla, Fundación, and Santa Marta.

These agree with others from Bolivia and Venezuela. In fresh plumage the birds are slaty gray above, becoming browner with wear and fading. Immature birds may readily be told by the obsolescent rufescent barring on the upper parts. In specimens shot from May to August the wings and tail are being renewed by moult.²⁵

²⁵ This was written before the appearance of Mr. Charles Chubb's recent paper (*Bulletin British Ornithologists' Club*, XXXIX, 1918, 21-23), in which he diagnoses two new forms of this species, from Nicaragua and western Peru respectively. Judging from the descriptions given, taken in connection with the series at present available for study, it seems questionable whether either of these supposed forms can be maintained.

Gurney was the first author to extend the range of this little kite to Colombia, stating that there was a specimen from Santa Marta in the collection of the Norwich Museum. It was not detected by Dr. Chapman in any other section of that country, and doubtless this is about its normal western limit. It is the most abundant of its family in the lowlands contiguous to Santa Marta, where a good series were taken and many more seen. In its haunts and habits it is much like the Sparrow Hawk, keeping to the more open woodland and cultivated lands.

29. *Harpagus bidentatus* (Latham).

Seven specimens: Cautilito, Las Vegas, Mamatoco, La Tigrera, and Pueblo Viejo.

A study of this series, in connection with other Colombian material in the collection of the American Museum of Natural History, seems to confirm in the main the conclusions reached by Gurney (*Ibis*, 1881, 120-123) regarding the sequence of plumages in this species. After leaving the spotted-breasted, brown-backed stage the bird assumes a dress in which the under parts are rich hazel, almost "solid" in some cases, barred posteriorly with whitish and dusky in others. This in turn gives way to a stage in which the under parts from the breast downwards (except the crissum) are more or less regularly barred with hazel, white, and slaty gray. This is the case with No. 41,921, La Tigrera, which agrees well with No. 107,726, Collection American Museum of Natural History, Los Cisneros, Colombia, and No. 132,992 (same collection), Dabeiba, Colombia. A small series from British, Dutch, and French Guiana are not nearly so distinctly barred underneath; in fact, most of the specimens are practically unicolor below. If it could be shown that Guiana birds never became so distinctly barred as those from Colombia the latter would constitute an excellent subspecies, but inspection of a much larger series would be requisite before such a separation would be justified.

Still more recently Mr. H. Kirke Swann (*Synoptical List of the Accipitres*, iii, 1920, 104) has described a third new form, *meridensis*, from Venezuela. This is based mainly on a supposed difference in the color of the sides of the breast and flanks, which is "pure white in Bahia birds," but "chestnut rufous" in those from Venezuela. This would of course be a good character if it were constant, but in our series of twenty specimens from Venezuela and Colombia all stages of gradation in color are in evidence.

This is supposed to be a very rare hawk, so that it was a surprise to find so many in this region, where it was found from the lower edge of the foothills up to 5,000 feet at Cincinnati. It is usually found in the forest or the woodland, and feeds entirely upon small birds. Mrs. Carriker had one for a pet for almost four months—a wing-tipped bird brought in alive. The writer has seen many savage hawks and owls, but never any to equal this bird. When approached it would throw itself back with wings half open and make lightning-like springs at its tormentor, and whenever its claws struck blood was sure to flow. In a few days it became less savage and began to eat the bodies of small birds which had been skinned. Its wings soon healed and we had to keep it tied with a strong cord to its foot, and after about a month it became quite tame, and Mrs. Carriker could do anything with it. Its capacity for meat was astonishing; it would gorge itself to the limit, then fluff up its plumage and sit with one eye open, gaping contentedly all about. Sometimes, if given a bird with the feathers on, its eyes would contract to mere pin-heads and glare with all their old-time ferocity, as it snatched the bird with one foot. For a long time it would never eat while watched, but in the end became used to it, and it was interesting to see it prepare a bird for eating. First all the feathers were pulled out, including the wing-feathers, then the brains were eaten, and finally the whole body. When we quit collecting it was too much trouble to get food for it, and as neither of us could bear the thought of making a specimen of it we released it and let it return to its native abode.

30. *Ictinia plumbea* (Gmelin).

Ictinia plumbea SCLATER, Proc. Zool. Soc. London, 1855, 134 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1879, 206 (Manaure).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Valparaiso).

Ictinia plumbea vagans MILLER and GRISCOM, Am. Mus. Novit., No. 25, 1921, 5 ("Santa Marta"; crit.).

Four specimens: Bonda and Cincinnati.

Specimens from this region are precisely like those from other localities in Central and South America. Individual variation, however, is considerable, some examples having practically no exposed rufous on the outer webs of the primaries, while in others it is very conspicuous indeed.

All the records for this kite come from the Tropical Zone, from

near sea-level at Bonda up to Cincinnati at 4,000 feet, but it would seem to be more numerous in the foothills than lower down. The specimen secured at Cincinnati was shot in the open country.

31. ***Rostrhamus sociabilis*** (Vieillot).

Rostrhamus sociabilis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Bonda).

A young bird, taken by Mr. Smith's collector at Bonda, August 22, 1898 (or 1899), is the only record of the Everglade Kite for this region, although the species is well known to have an extensive distribution in tropical America.

32. ***Geranospiza cærulescens*** (Vieillot).

Geranospizias cærulescens ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Bonda).

Eight specimens: Bonda, Mamatoco, Guairaca, and Fundación.

This is a Guiana species, which reaches its western limit in the Caribbean coast region of Colombia, being unknown in any other part of that country. In Central America it is replaced by an allied but perfectly distinct form, *Geranospiza nigra* (Du Bus). It seems to be a rare bird, and recorded only from the Tropical Zone lowlands. Mr. Smith sent in no less than nine specimens, collected at Bonda, Mamatoco, and Guairaca, while the writer took one at Fundación. It is found in the forest.

33. ***Accipiter superciliosus exitiosus*** Bangs and Penard.

(?) *Accipiter fontainieri* BONAPARTE, Rev. et Mag. de Zoöl., V, 1853, 578 (orig. descr.; locality of type not stated).—BONAPARTE, Compt. Rend. Acad. Sci., XXXVII, 1853, 807 (reprint orig. descr.).

Accipiter tinus (not *Falco tinus* Latham) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Las Nubes).

Accipiter superciliosus exitiosus BANGS and PENARD, Proc. New England Zoölogical Club, VII, 1920, 45 ("Santa Marta").

Mr. Smith sent in a single specimen of this diminutive hawk from Las Nubes, in the Subtropical Zone, shot December 19, 1898. It is in the rufous (immature) plumage, and is probably a female. It was a bird in this plumage which constituted the type of Bonaparte's *Accipiter fontainieri*, a species described without any locality being specified, but which almost certainly came from the Santa Marta region, since it was said to have been received from M. Fontainier, whose

name we find in connection with specimens of other species from this region. We suspect, therefore, that if birds from northern Colombia are referable to the northern form, the name *fontainieri* will have precedence over the more recent designation of Messrs. Bangs and Penard.

34. **Accipiter salvini** (Ridgway).

Two specimens: Cincinnati and Cerro de Caracas.

The Cerro de Caracas specimen is an adult female, fitting the original description fairly well, but has the auriculars and sides of the throat tinged with buffy, while the sides of the breast show faint rufescent barring. The wings and tail are brown. The other is a male, and a younger bird, with the barring below more prominent, also the streaking on the breast; the upper surface is faintly barred with dull rufous. The species was described from Merida, Venezuela, and appears to be a very distinct one, differing decidedly from *A. ventralis* Sclater in its white under parts, larger size, etc. Very few specimens are on record, and the extension of its range to the Santa Marta region is an interesting discovery.

A male was taken near Cincinnati, July 12, 1913, in the forest at about 4,000 feet, and a female on the open ridge of the Cerro de Caracas, April 4, 1914, at about 9,000 feet. It appears to replace *A. bicolor* in the Subtropical Zone.

35. **Accipiter bicolor bicolor** (Vieillot).

Accipiter bicolor ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Bonda and Onaca).

Ten specimens: Bonda and La Tigrera.

Not having seen topotypical Cayenne specimens at this writing, we are unable to express any opinion on the validity of the supposed form *A. bicolor schistochlamys* Hellmayr (*Bulletin British Ornithologists' Club*, XVI, 1906, 82), to which the Santa Marta birds would be expected to belong. Mr. Hellmayr says that in typical *bicolor* the under surface is white, but Mr. Chubb (*Birds of British Guiana*, I, 1916, 228) describes it as "pale slate-grey," and doubtless this matter will bear further investigation. The adults of this series are fairly uniform, but the immature birds present two phases of plumage, one of which is nearly white below, the other strongly tinged with buffy. Two specimens shot in late April show the transition by

moult from each of these phases respectively into the gray adult dress.

This hawk is confined to the Tropical Zone. All but one of Mr. Smith's specimens were taken at Bonda, the exception coming from Onaca (2,500 feet). A single male was shot by the writer at La Tigrera, in the woodland.

36. *Astur poliogaster* (Temminck).

One specimen: Bonda.

A female example, secured by Mr. Smith's collector at Bonda, April 26, 1899, adds another to the list of known specimens of this excessively rare species, and incidentally greatly extends its range, which had heretofore been supposed to be Guiana, eastern Brazil, and Paraguay. For many years this species was known only from the type-specimen in the Leyden Museum, until Gurney (*Ibis*, 1881, 258) recorded a second, more fully mature bird. Several years ago the Bonda specimen here recorded was forwarded to the British Museum for comparison with the latter, with the result stated in the following letter from Mr. W. R. Ogilvie-Grant: "I have examined the Goshawk you forwarded for identification. It is of course one of the rarest species of American *Astur*, and we have only one male example, which is probably not quite fully adult, or rather not an old bird. The cheeks and sides of the neck are greyish-black, and less uniform in tint. I have, however, after a careful comparison, no doubt whatever that your specimen is a fully adult female of *Astur poliogaster*. It is a beautiful species."

In 1887 Gurney (*Ibis*, 1887, 96) described and figured a hawk from an unknown locality under the name *Urospizias jardinei*, which is nothing more or less than the fully adult *Astur poliogaster*, as recently shown by Mr. Chubb (*Birds of British Guiana*, I, 1916, 226). With this description and plate the Bonda specimen agrees well. It measures as follows: wing, 266; tail, 193; bill, 29; tarsus, 61. We pass by for the present the question of this species being properly referable to *Astur*.

Astur tachiro unduliventer (Rüppell).

Accipiter castanilius SCLATER, Proc. Zoöl. Soc. London, 1866, 304 ("Santa Marta" [error]).

"M. Verreaux informs me that he received several examples of this very distinct species from his collector at Santa Marta. One of them is now in the British Museum, and is the only specimen I have seen of this bird." It turns

out, however, that this is an African species, probably the same as *Astur tachiro unduliventer* (cf. Ogilvie-Grant, *Ibis*, 1904, 278). Further comment on the authenticity of much of the material which passed through Verreaux's hands is unnecessary.

37. *Buteo platypterus platypterus* (Vieillot).

Buteo pennsylvanicus SALVIN and GODMAN, *Ibis*, 1880, 177 (Minca).

Buteo latissimus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Bonda and Valparaiso).—ALLEN, *Auk*, XVII, 1900, 364 (Bonda and Valparaiso; Minca, *ex* Salvin and Godman; "Santa Marta," *ex* Bangs).—BURNS, *Wilson Bull.*, XVIII, 1911, 146, 194 (Santa Marta references and localities).

Additional records: La Concepcion (Brown).

Fifteen specimens: Bonda, Cinto, Valparaiso, Mamatoco, and Pueblo Viejo.

The Broad-winged Hawk is a winter resident, fairly common in the region from sea-level up to 5,000 feet altitude. It is often seen in large flocks upon its arrival in the fall. The earliest date for that season is October 12 (1900), and the latest in the spring is April 10 (1899). Adult birds are precisely like those from the eastern United States.

38. *Buteo abbreviatus* Cabanis.

Three specimens: Bonda and Mamatoco.

Although this hawk was described from British Guiana, there appear to be very few South American records for it thus far. Mr. Smith sent in two specimens, both from Bonda, collected June 23 and September 27, 1899, respectively, and Mr. Carriker one from Mamatoco, July 31, 1913. It appears to be a rare species here as elsewhere in its range.

39. *Buteo albicaudatus* subsp.

Two specimens: Bonda.

Four forms of this species have been described, and it is by no means clear to which of these Santa Marta examples should be referred. The typical form comes from Paraguay; it is said to be a dark bird, with the throat plumbeous, even in fully adult individuals. In the northern form, *scnnetti*, described from the lower Rio Grande Valley in Texas, the upper parts are lighter, more grayish or slaty, and the throat is medially white in old birds. These differences are evident

in the small series we have studied, as well as in the much larger one examined by Dr. Allen (*Bulletin American Museum of Natural History*, V, 1893, 142) and Dr. Chapman (*Ibidem*, XXXIV, 1915, 637), but whether they actually hold good is open to question. Indeed, Salvin and Godman distinctly state that they do *not* hold good (*Biologia Centrali-Americana*, Aves, III, 1900, 58), and their conclusion is certainly entitled to consideration. Furthermore, the status of Colombian specimens is doubtful. We have one adult from western Colombia, which agrees in all respects with birds from Texas, while the single old bird from Bonda cannot be distinguished from another from Bolivia. These two examples cannot be referred to *exiguus*, recently described by Dr. Chapman (*l.c.*) from eastern Colombia and Venezuela, judging from the description. If, however, the Santa Marta bird is also referable to the northern form, and the latter is valid (which in our opinion is doubtful), the name *colonus* of von Berlepsch (*Journal für Ornithologie*, XL, 1892, 91), based on an immature (dark) bird from Curaçao, will have to be considered, since the chances are that it is an earlier name for this form, instead of merely being applicable to an insular race, as supposed by its describer.

The above specimens are dated respectively March 3 and November 28, 1899. A pair of hawks, without doubt belonging to this species, were noted by the junior author along the road near Arroya de Arenas, in the extreme eastern part of the region.

40. *Buteo brachyurus* Vieillot.

Three specimens: Bonda and Palenque.

Two in the dark and one in the light phase. All three were received from Mr. Smith. The species is known to have an extensive distribution in tropical America, but little seems to be on record concerning it.

41. *Heterospizias meridionalis meridionalis* (Latham).

Urubitinga meridionalis SALVIN and GODMAN, Ibis, 1879, 206 (Santa Marta region, exact locality omitted).

Six specimens: Mamatoco, Bonda, and Fundación.

Some variation is evident, affecting the amount of rufous on the wings, the barring of the upper back, etc., for which age is probably responsible.

This species is evidently partial to swampy places. The Mama-

toco specimen was shot near the same marsh where *Falco fuscocarulescens fuscocarulescens* was found, and at Fundación two were taken along the edge of the big marsh. Its local range is probably the lowlands around the Cienaga Grande and lower Magdalena Valley. It appears to be unknown in the interior of Colombia.

42. **Morphnus urubitinga** (Gmelin).

Urubitinga zonura ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Bonda).

Additional records: Fundación (Univ. Mich. Exp.).

Three specimens: Bonda, Neguange, and Don Diego.

For the use of this generic name in place of *Urubitinga* compare Opinion 62 of the International Commission on Zoölogical Nomenclature (*Smithsonian Institution Publication* No. 2256, 1914, 147).

The series examined fails to show any indications of intergradation between *M. urubitinga* and *M. ridgwayi* of Central America, which we would therefore keep specifically distinct.

A common bird along the coast and the shores of the Cienaga Grande, and found inland also to some extent, but only along the streams. Its food consists largely of shell-fish and crabs washed up on the beach.

43. **Morphnus anthracinus anthracinus** (Nitzsch).

Urubitinga anthracina SCLATER, Proc. Zoöl. Soc. London, 1858, 129, in text (cf. footnote) ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 177 (Santa Marta).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Bonda).

Fourteen specimens: Bonda, Playa Concha, and Cinto.

Adults differ from two specimens from British Honduras in having the feathers of the back with concealed buffy white bases, but whether a series of northern birds would bear out this difference remains to be seen. As this character is one of those upon which Mr. Clark relies for separating the bird from the Lesser Antilles, called by him *cancrivora* (*Proceedings Biological Society of Washington*, XVIII, 1905, 63), further comparisons are naturally desirable. Mexico is the type-locality, and the only other available name for the southern form, if valid, is *Urubitinga subtilis* Bangs (*Bulletin Museum of Comparative Zoölogy*, XLVI, 1905, 94). The relative position and width of the white tail-band appears to be subject to considerable variation in the series examined, but the variation in question seems to be purely individual.

This species was first recorded from this region by Selater many years ago, on the authority of Verreaux. It was recorded by Simons also, while Mr. Smith sent in no less than seventeen specimens, all from the coast region. For some unexplained reason Mr. Carriker failed to meet with it in this part, or indeed anywhere except in the Rio Rancheria-Rio Cesar Valley, where it was observed in small numbers in July and August, 1920, at Rio Hacha, Arroya de Arenas, and Valencia. A nest was secured by Mr. Smith's collectors at Bonda, April 3. It is merely a platform of twigs, all nearly the same size, and is about two feet in diameter. The single egg measures 61×47 , and is pale bluish white, with spots and blotches of chocolate and brown, chiefly about the larger end.

44. *Asturina nitida nitida* (Latham).

Asturina nitida ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (Bonda).

Nineteen specimens: Bonda, Don Diego, Mamatoco, and Dibulla.

There is some variation in adults, but none are quite so pale and white below as the type of *A. nitida pallida* of Bolivia (cf. *Proceedings Biological Society of Washington*, XXVIII, 1915, 170), the characters of which are the exact opposite of those of *A. plagiata* of Mexico and Central America, which may also eventually prove to be conspecific. The series of immature birds shows all the various stages of the moult from the streaked young into the barred adult plumage. They were taken at dates ranging from February 24 to April 22.

The series collected by Mr. Smith came from Bonda and Don Diego. The writer found the species fairly common at the latter locality, as well as at Fundación. It is a Tropical Zone bird, evidently regularly found only in the heavier forest of the lowlands.

45. *Pernohierax leucorrhus* (Quoy and Gaimard).

Rupornis leucorrhoa ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (El Libano).

A fine adult male of this hawk was received from Mr. Smith, collected at El Libano, May 23, 1899. The species was described from Brazil, and appears to be still rare in collections. The locality whence it was procured in this region lies well within the Subtropical Zone.

For the generic name used here see Ridgway, *Smithsonian Miscellaneous Collections*, LXXII, No. 4, 1920, 2.

46. *Rupornis magnirostris insidiatrix* Bangs and Penard.

Asturina magnirostris (not *Falco magnirostris* Gmelin) SHARPE, Cat. Birds Brit. Mus., I, 1874, 207 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 176 (Santa Marta and Minca; habits; food).

Rupornis magnirostris BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (Bonda); XXI, 1905, 280 (Bonda; descr. nest and eggs).

Rupornis magnirostris insidiatrix BANGS and PENARD, Bull. Mus. Comp. Zoöl., LXII, 1918, 36 ("Santa Marta Mountains"; orig. descr.; type in coll. Mus. Comp. Zoöl.).—SWANN, Syn. List Accipitres, iii, 1920, inserted page (ref. orig. descr.).

Seventeen specimens: Bonda, Mamatoco, Don Diego, Punto Caiman, Tierra Nueva, Minca, Fundación, and Dibulla.

Comparison of the above series with another from French Guiana and eastern Venezuela, typical of *magnirostris*, shows that the Santa Marta birds represent a well-marked race, easily distinguishable by its paler, purer gray coloration. Selecting specimens in fresh plumage for comparison, we find that in true *magnirostris* the pileum and upper surface in general are deep neutral gray, while in the new form these parts are light neutral gray. There is a corresponding difference in the color of the throat and breast, while the posterior under parts are not so heavily barred, the white predominating, and usually with less rufescent shading, in *insidiatrix*. Fortunately our series of both forms is sufficiently large to eliminate the factor of individual and age variation, which is considerable in this species. The characters here assigned, however, seem to hold good even for immature birds, making due allowance for their peculiarities.

Several examples from northern Venezuela show an approach to the characters of this new form, but specimens from the interior of Colombia are perfectly typical *magnirostris*. Not having seen birds from the coast region of Colombia farther to the westward at this writing, we are unable to say whether they belong here or not; if not (as one may judge from the remarks of Dr. Chapman in his recent paper), then the range of *insidiatrix* would be restricted to the Santa Marta region.

One of the most abundant of all the hawks of this region, where, however, it is restricted to the lowlands and lower foothills of the Tropical Zone, rarely straggling up to 2,000 feet. It is found in the forest and open woodland, especially along streams, and is rather tame

for a hawk, according to the experience of the writer. Simons, however, says that it is "common in the forest, but hard to shoot, as it is very wary and not easily seen among the foliage. In the throat of the Santa-Marta specimen I found a large green lizard; they are also very fond of snakes. In the stomach of the specimen from Minca I found fourteen scorpions."

Mr. Smith sent in two nests, each with one egg, collected at Bonda, April 13 and 18. "The nests are rudely constructed of sticks, placed in the fork of a branch, and are rather small for the size of the bird. The two eggs vary greatly in color. The ground color is a rather dull grayish white, specked and blotched with pale chocolate, sparsely over the small end, more thickly about the middle, while the large end in one is palely washed and mottled with chocolate over the greater part of the surface; in the other, the large end is more heavily washed with a much darker shade of chocolate and heavily streaked with lines of dark umber. They measure 42.5×35 and 42×34 , the eggs being oval."

In addition to the localities above specified, this hawk was observed at Arroya de Arenas, Badillo, and Valencia, in the valley southeast of the Sierra Nevada, in July and August, 1920.

47. *Busarellus nigricollis* (Latham).

Busarellus nigricollis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Bonda).

Additional records: Fundación (Univ. Mich. Exp.).

Five specimens: Bonda, Mamatoco, and Trojas de Cataca.

Here, as elsewhere throughout its range, this hawk is partial to swampy places or the vicinity of water. One was shot on the shore of the Cienaga Grande, and another near a small marsh in a pasture. Mr. Smith sent in five specimens, all from Bonda.

48. *Urubitornis solitarius* (Tschudi).

Geranoëtus melanoleucus (not *Spizaëtus melanoleucus* Vieillot) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Agua Dulce).

One specimen (exact locality unknown).

Unfortunately the label of this specimen (sent in by Mr. Carriker) has been lost and the exact locality and date of capture are unknown. Together with the Agua Dulce bird received from Mr. Smith, it was forwarded to Dr. Charles W. Richmond of the U. S. National Museum

for examination, who reports as follows: "The specimens appear to be adult and immature of *Urubitornis solitarius*. We have one immature bird from Guatemala, but no adult specimen. However, reference to Gurney, *Ibis*, 1876, 491; Salvin and Godman, *Biologia Centrali-Americana*, Aves, III, 1900, 87; and Kothe, *Ornithologische Monatsberichte*, XX, 1912, 1-5, seems to leave no doubt of this identification." Measurements are as follows:

No.	Sex.	Locality.	Date.	Wing.	Tail.	Bill.	Tarsus.
73229 ¹	(♀ im.)	Agua Dulce	April 26, 1899	520	270	42	129
62589 ²	(♂ ad.)	?	?	510	230	36	119

The adult fits Dr. Kothe's and Messrs. Salvin and Godman's description very well, being nearly uniform dark gray (slate-gray), with faint brownish tips to the feathers of the upper parts. There is no crest, but the feathers of the occiput are white at the base. The remiges are indistinctly barred with paler gray, and the tail is as described, the upper tail-coverts tipped with white. The young bird was inadvertently identified by Dr. Allen as *Geranoëtus melanoleucus*. From its measurements, which agree with those given by Dr. Kothe, it is probably a female. It is dark brown above, the scapulars, wing-coverts, etc., mottled with lighter brown. The crown is also dark brown, but the hindneck, sides of the neck behind the eye, and upper back is buffy, with brown shaft-streaks, expanding to spots posteriorly; the throat is buffy, below which there is an interrupted brown band extending forward up to the eye on either side; the rest of the under surface is buffy white, with much brown spotting, mostly terminal on the feathers; the tibiae are wholly brown; the tail is dull brown with much paler mottling, especially on the lateral rectrices; the upper tail-coverts are tipped with white, as in the adult. The new feathers in this plumage are all deeper brown than the others, but not slaty as in the adult. The axillaries are buffy, and the remiges extensively buffy white at the base beneath.

Little is on record concerning this hawk, which is rare in collections. It was confused by Sharpe and other authors with *Harpyhaliaëtus coronatus* (Vieillot). It is known to range from southern Mexico to Peru.

¹ Collection American Museum of Natural History.

² Collection Academy of Natural Sciences of Philadelphia.

49. *Spizaëtus ornatus* (Daudin).

One specimen: Bonda.

A fine female, shot at Bonda, March 13, 1899, constitutes the only record for this region up to date. The species is known to have an extensive distribution in South and Central America.

50. *Spizaëtus tyrannus* (Wied).

One specimen: Bonda.

This example was shot March 12, 1899. It is an adult female in full plumage. Like *S. ornatus*, this species is found throughout tropical South America, north to Guatemala in Central America. It has been suggested by Messrs. F. P. and A. P. Penard (*Vogels van Guyana*, I, 1908, 415) that possibly this is merely a melanistic phase of *S. ornatus*, but our specimens do not support such a view. *S. tyrannus* has a relatively as well as absolutely longer wing than *S. ornatus*, while its tibiae and tarsus are much shorter.

51. *Oroaëtus isidori* (Des Murs).

Lophotriorchis isidori ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Bonda).

One specimen: Las Nubes.

On the use of the generic name here adopted consult Ridgway, *Smithsonian Miscellaneous Collections*, LXXII, No. 4, 1920, 1.

Two specimens of this fine large hawk were received from Mr. Smith, an adult female shot at Bonda, May 27, 1898? (or 1899), and an immature specimen from Las Nubes, December 21, 1899. It appears to have an extensive altitudinal range, being recorded by Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 248) from the Western Andes at 11,000 feet.

Family FALCONIDÆ. CARACARAS.

52. *Herpetotheres cachinnans cachinnans* (Linnæus).

Herpetotheres cachinnans SCLATER, Proc. Zool. Soc. London, 1855, 134 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Bonda).

Herpetotheres cachinnans cachinnans CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIV, 1915, 638, in text (Santa Marta [region]; crit.).

Herpetotheres cachinnans fulvescens (not of Chapman) APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, IV, 1916, 38 ("Santa Marta," in range).

Six specimens: Bonda, Neguange, Don Diego, and Fundación.

Indistinguishable from a specimen from French Guiana. Birds from the Pacific coast region of Colombia and Ecuador have been discriminated as a distinct race, *H. cachinnans fulvescens* Chapman.

The Laughing Hawk is not a very common bird in this region, and is confined to the more heavily wooded parts of the lowlands, never ascending to the hills. It has a peculiar characteristic cry, easily recognized at a long distance, whence its name. Its food consists largely of snakes.

53. **Micrastur zonothorax** (Cabanis).

Micrastur ruficollis (not *Spärvius ruficollis* Vieillot) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Valparaiso and El Libano).

Eight specimens: Cincinnati, Sierra Nevada de Santa Marta (8,000 feet), Las Vegas, San Lorenzo, Pueblo Viejo, and Chirua.

Four adults and four young birds are referred to this species, which was originally described from Puerto Cabello, Venezuela. The upper parts of the adults are deep brown (the exact shade varying somewhat), the pileum and nape duller, and in one specimen dusky slate, in abrupt contrast. Two of these have four white bands on the rectrices (not counting the terminal one), the proximal one more or less concealed by the upper tail-coverts, while the other two specimens have but three such bands. A specimen from northern Venezuela (La Cumbre de Valencia) is similar, but has *five* bands on the tail. The lower parts are barred with black and white, in more or less uniform pattern; the sides of the throat and breast are more or less shaded with the brown of the upper parts. It is clear that notwithstanding these variations only one species is represented, which is sufficiently distinct both from *M. guerilla* on the one hand and from *M. gilvicollis* on the other, but in the absence of authentic specimens of *M. ruficollis* for comparison, and in view of the confusion in which the several members of this group still seem to be involved, despite the work of Messrs. Ridgway, Gurney, and others, we are unable to discuss the matter further.

This hawk is not uncommon in the heavy forest of the Subtropical Zone, both on the San Lorenzo and in the Sierra Nevada. In the former locality it ranges between 5,000 and 7,000 feet, and in the latter between 2,000 and 5,000 feet. It has a characteristic call-note, often

heard when one is in the vicinity of its haunts. It is a shy bird and very difficult to approach, perching high up in the trees and sitting quietly.

54. *Micrastur brachypterus brachypterus* (Temminck).

Micrastur semitorquatus (not *Sparvius semitorquatus* Vieillot) SALVIN and GODMAN, Ibis, 1880, 177 (Valencia).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 130 (Bonda).

Nineteen specimens: Bonda, Neguange, Cincinnati, Mamatoco, Dibulla, and Fundación.

The true explanation of the color-variations so conspicuous in this species would seem to be simply dichromatism. Thus, of nine adults in our collection four are white below, while five are buffy, varying from buffy white to deep buff. Of ten young birds two have the ground-color of the under parts pure white, in two others it is slightly tinged with buffy, and in the remaining six it is decidedly buffy. There is only one specimen (No. 41,813, Mamatoco, April 15) which does not entirely lend itself to this explanation. This is a young bird which is assuming the adult dress by moult. The throat, breast, and chest are rich buffy, immaculate, while the rest of the under surface is white, in abrupt contrast, barred with dusky black. But perhaps this merely goes to show that the white and buff phases are interchangeable by moult.

We have not seen Ecuador specimens, which have lately been described as a distinct race (Swann, *Synoptical List of the Accipitres*, II, 1919, 15), but Colombian birds are precisely like those from Bolivia.

This *Micrastur* is not an uncommon bird in the Tropical Zone lowlands, apparently on all sides of the mountains. It was secured by Simons at Valencia, and by Messrs. Smith and Brown in the neighborhood of Santa Marta, while the writer has traced it from Dibulla on the north coast to Fundación on the south. It is found only in the forest or open woodland, and keeps rather low down, often in the tangled thickets.

55. *Falco peregrinus anatum* Bonaparte.

One specimen: Bonda.

The only record for the Duck Hawk in this region is based on a single specimen in immature dress secured at Bonda, October 20,

1899, by one of Mr. Smith's collectors. It is doubtless to be listed as a winter resident.

56. **Falco columbarius columbarius** Linnæus.

Four specimens: Bonda, Mendeguaca, and Rio Hacha.

The Pigeon Hawk is probably a winter resident in this region, but all the records were made in April and May. Mr. Smith's collection contains specimens from Bonda, April 15 and 22, and from Mendeguaca, May 1, 1899. The writer took a single individual, the only one he has ever seen in this section, near the mouth of the river at Rio Hacha, May 2, 1914. Every one of these birds is in worn winter plumage, the only male still in the brown immature dress, suggesting that they may have been individuals in poor physical condition, retarded in their migration.

57. **Falco albigularis albigularis** Daudin.

Hypotriorchis rufigularis SCLATER, Proc. Zoöl. Soc. London, 1855, 134 ("Santa Marta").

Falco rufigularis BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 92 (La Concepcion).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Minca).

Five specimens: Bonda, Cincinnati, and Mamatoco.

This little falcon is a rare bird in this region, where it is mainly confined to the Tropical Zone, ranging from sea-level up to 5,000 feet. It is, however, more common in the foothills than in the lowlands, and is always seen in open country among scattered trees or in cultivated lands. We are unable to distinguish specimens from this region from others from elsewhere (except those from eastern Bolivia), although Mr. Chubb has recently seen fit to further subdivide the species (*Bulletin British Ornithologists' Club*, XXXIX, 1918, 22).

58. **Falco fuscocœrulescens fuscocœrulescens** Vieillot.

Two specimens: Mamatoco.

Paraguay is the type-locality of this form, and our specimens from Bolivia may doubtless be considered typical. Colombian and Bolivian skins are similar, although there is some individual variation. Some specimens, probably younger birds, have the chest more or less streaked with dusky black, while in others it is immaculate. The two specimens above recorded are in fresh dark slaty dress above, except for some of the remiges and rectrices, which are still brown and worn. The avail-

able South American series of this hawk differs materially in size from northern birds, as the following table of comparative measurements will show. Only specimens in comparatively unworn plumage have been utilized.

Falco fuscocarulescens fuscocarulescens:

No.	Sex.	Locality.	Wing.	Tail.	Bill. ⁵	Tarsus.
42022 ¹	♂	Mamatoco, Colombia.....	238	155	16	44
52194 ¹	♂	Turbaco, Colombia.....	230	150	16.5	44
54488 ¹	♂	Aguachica, Colombia.....	241	149	16	44
43958 ¹	♂	Buenavista, Bolivia.....	240	154	16	45
43960 ¹	♂	Buenavista, Bolivia.....	248	162	15	45
50615 ¹	♂	Buenavista, Bolivia.....	240	152	16	43
42021 ¹	♀	Mamatoco, Colombia.....	270	177	19	46
52598 ¹	♀	Lorica, Colombia.....	271	175	20	48
51586 ¹	♀	Buenavista, Bolivia.....	267	169	18	45
52979 ¹	♀	Miraflores, Argentina.....	263	178	19	47

Falco fuscocarulescens septentrionalis:

20665 ¹	♂	Cameron County, Texas.....	253	176	17.5	46
21469 ²	♂	Brownsville, Texas.....	258	174	17	49
21471 ²	♂	Brownsville, Texas.....	263	173	17	47
21472 ²	♂	Brownsville, Texas.....	263	177	17.5	50
20041 ²	♂	Tampico, Mexico.....	257	177	15.5	49
33074 ³	♂	Cameron County, Texas.....	258	179	16	50
111485 ⁴	♂	Fort Huachuca, Arizona (Type)...	267	180	16	47
20666 ¹	(♀)	Brownsville, Texas.....	290	193	20.5	50
20667 ¹	♀	Cameron County, Texas.....	283	189	19	50
21473 ²	♀	Brownsville, Texas.....	294	201	20	49
21474 ²	♀	Brownsville, Texas.....	290	200	20	52

The northern birds as a rule have the black area on the lower parts more extensive, but in any case their markedly superior size would seem to entitle them to formal recognition, and they have accordingly been described under the above name by the writer in the *Proceedings of the Biological Society of Washington*, XXIX, 1916, 98.

A pair of these handsome falcons were taken near a small stream

¹ Collection Carnegie Museum.

² Collection Dr. Louis B. Bishop.

³ Collection Dr. Jonathan Dwight.

⁴ Collection U. S. National Museum.

⁵ Exclusive in this case of the cere.

in an open pasture near Mamatoco, May 23, 1913. These were the only ones ever noted in this region.

59. **Falco sparverius isabellinus** Swainson.

Tinnunculus sparverius (not *Falco sparverius* Linnæus) SALVIN and GODMAN, Ibis, 1879, 206 (Manaure; plum.); 1880, 177 (Valencia).—GURNEY, Ibis, 1881, 548, in text, 549, 553 (Manaure; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Salvin and Godman's and Bangs' references).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 105 (Santa Marta localities).

Falco sparverius BANGS, Proc. Biol. Soc. Washington, XII, 1898, 172 (Palomina and San Miguel).

Additional records: Macotama, La Concepción (Brown); Taquina (Carriker).

Fifteen specimens: Mamatoco, San Miguel, Fundación, Pueblo Viejo, and Macotama.

Although both Mr. Cory (*Field Museum Ornithological Series*, I, 1915, 311-335) and Dr. Chapman (*Bulletin American Museum of Natural History*, XXXIV, 1915, 372-382) have recently reviewed the races of the Sparrow Hawk found in northern South America, neither had access to any specimens from the Santa Marta region of Colombia. Dr. Chapman, however, had before him a pair of birds from Turbaco (near Cartagena), Colombia, which he was unable to place satisfactorily. We have one adult male from Cartagena; it agrees absolutely (save for a rufous crown-spot) with a specimen from Maripa, Rio Caura, Venezuela, identified (we think rightly) by Dr. Chapman as *isabellinus*. The series from the Santa Marta region certainly belongs to the same pale form, the range of which is thus shown to extend westward along the coast from eastern Venezuela. The males show all the variations in the marking of the outer rectrices to which these authors have called attention; the under surface, too, is paler in some individuals, more rufescent in others, showing an approach to *F. s. ochraceus*, the range and status of which will be discussed in another connection.

This is not a common bird in the immediate vicinity of Santa Marta, and, indeed, was not taken at all by Mr. Smith's collectors. It ranges over the whole region from sea-level up to 8,000 feet, but is more common in the parts where open grass-lands or pastures prevail. It was very common from San Miguel up to Macotama in the valley and

adjoining mountain slopes, and was noted also at Rio Hacha and Valencia. Grasshoppers of several species, as well as the migrating locust, are very common here, which probably accounts for the abundance of the Sparrow Hawk, the food of which consists largely of these insects.

60. **Polyborus cheriway cheriway** (Jacquin).

Polyborus cheriway SALVIN and GODMAN, Ibis, 1880, 177 (Valencia; habits).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Bonda).

Polyborus cheriway cheriway BANGS, Auk, XXXV, 1918, 433 (Punto Caiman; crit.).

Additional records: Fundación (Univ. Mich. Exp.).

Three specimens: Bonda and Punto Caiman.

The Caracara is a common bird in the more arid portions of the lowlands, especially around Cienaga Grande. Simons gives the following account of it as observed at Valencia: "Local name 'Caricare.' Frequents the extensive savannas at the foot of the Sierra; flies very little and low, running about in the grass in search of lizards, etc.; usually associated with cattle; said to seize sick lambs and young goats."

61. **Milvago chimachima cordata** Bangs and Penard.

Milvago chimachima (not *Polyborus chimachima* Vieillot) SALVIN and GODMAN, Ibis, 1880, 177 (Valencia; habits).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Salvin and Godman's reference).

Eight specimens: Bonda.

These differ as stated by Messrs. Bangs and Penard (*Bulletin Museum of Comparative Zoölogy*, LXII, 1918, 35) from a specimen from Bolivia, presumed to be typical *chimachima*. Immature birds bear dates between March 15 and April 12.

Simons, who collected several specimens at Valencia, on the south slope of the Sierra Nevada, says that its "local name [is] 'Garrapatero' or 'Piopio,' from its feeding on the ticks (garapata) of cattle, and from its peculiar cry of *pi-i-o*, *pi-i-o*. Frequents palm trees, where it builds its nest. A young male which could scarcely fly I knocked down with a stone." Mr. Smith met with it at Bonda, but Mr. Carriker failed to find it in this region until his second visit to Rio Hacha in July, 1920. The species has an extensive South American range.

62. *Ibycter americanus* (Boddaert).

One specimen: Tucurínca.

A single specimen of this hawk, heretofore unrecorded from the Santa Marta region, was taken at Tucurínca, September 17, 1915, in the dense forest of the alluvial plain. Others were heard here but not secured. Evidently the bird is confined in this region to the swampy forest of the Tropical Zone contiguous to the Cienaga Grande and the Magdalena River.

Family PANDIONIDÆ. OSPREYS.

63. *Pandion haliaëtus carolinensis* (Gmelin).

One specimen: Bonda.

The date is October 17, 1899. Whether the species is resident all the year round or merely a winter visitor from farther north does not appear.

Family TINAMIDÆ. TINAMOUS.

64. *Tinamus major ruficeps* Sclater and Salvin.

Tinamus ruficeps ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 124 (Cacagualito).

Tinamus major ruficeps CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 187 ("Santa Marta"; crit.).

Six specimens: Valparaiso, La Tigrera, Las Vegas, and Pueblo Viejo.

Unquestionably this form is very close to *T. major major* of French Guiana, of which we have one toptotypical specimen. The present series is quite uniform, and is barely separable from another from eastern Venezuela, with which latter our French Guiana example agrees. *T. major castaneiceps*, the range of which it touches on the west, is very different, however. For a further discussion of the various races of this group Dr. Chapman's paper, above cited, should be consulted.

This, the largest tinamou of the region, is found throughout the Tropical Zone, ranging from sea-level up to 5,000 feet. It is seemingly as much at home in one place as another, provided heavy forest is present. It is strictly a ground bird, feeding and spending most of its time on the ground, but probably roosting in trees, as it would scarcely survive long if it were to spend the night on or near the ground. It is a very shy bird, flushing suddenly and darting off

through the forest like a rocket. Still-hunting is the only possible way to secure specimens.

Three eggs of this species, found by Mr. Smith's collector "on the ground" at Valparaiso, May 26, are of the spheroidal shape usual in this family, very glossy in texture, and deep bluish glaucous in color. They measure 59×46 .

65. *Crypturornis soui mustelinus* (Bangs).

Crypturus pilcatus (not *Tetrao pileatus* Boddaert) SALVADORI, Cat. Birds Brit. Mus., XXVII, 1895, 522 (Pueblo Viejo).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta"; crit.).

Crypturus soui (not *Tinamus soui* Hermann) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 124 (Minca and Bonda).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, III, 1904, 454 (Pueblo Viejo).

Crypturus soui mustelinus BANGS, Proc. Biol. Soc. Washington, XVIII, 1905, 151 ("Mountains near Santa Marta" [type-locality] and La Concepcion; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 277 (ref. orig. descr.; syn.), 279 (Don Amo; descr. nest and eggs).—CARRIKER, Ann. Carnegie Mus., VI, 1910, 378, 379 ("Santa Marta"; descr.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 141, in text (Santa Marta [region]; crit.); XXXIV, 1915, 636, in text (range; crit.).—BRABOURNE and CHUBB, Ann. and Mag. Nat. Hist., (8), XIV, 1914, 319 (diag.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, IV, 1916, 38 (range, *ex* Chapman).

Crypturus mustelinus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 3 (ref. orig. descr.; range).

Five specimens: Don Amo, Don Diego, Cincinnati, and Minca.

Crypturornis soui is a species which varies immensely in various parts of its extensive range, no less than eleven geographical races having been described up to date. Of these *C. soui mustelinus*, proposed for the Santa Marta bird by Mr. Bangs, is one of the best marked. The females of *C. soui soui*, *C. soui mustelinus* and *C. soui caucæ* are all very much alike so far as the colors of the under parts are concerned, but they can be separated by the color of the pileum, which is brown in *mustelinus*, and grayish or dusky in the other two forms. The upper parts in general also average slightly paler. Males of *mustelinus* are paler, more buffy, less rufescent brown both above and below than the same sex of either *soui* or *caucæ*. A small series from northern Venezuela indicates that the range of *mustelinus* extends to that section also.

This little tinamou is not a rare bird at all, but is next to impossible

to secure by ordinary means, frequenting as it does the thickest kind of second-growth or scrub, and being moreover excessively shy. It ranges through the Tropical Zone, or from sea-level up to at least 5,000 feet, but is more common in the lower foothills and the coastal plain. It was found to be fairly common at Loma Larga in July, 1920.

Mr. Smith sent in two eggs, found on the ground in a thicket at Don Amo, August 6, and described as "nearly uniform ecru drab."

66. *Crypturornis idoneus* (Todd).

Crypturus columbianus (not of Salvadori) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 131 ("Santa Marta"; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 124 (Bonda).

Crypturus idoneus TODD, Proc. Biol. Soc. Washington, XXXII, 1919, 117 (Bonda; orig. descr.; type in coll. Carnegie Mus.).

Two specimens: Bonda.

Description.—Adult male: pileum dull brown (nearest bone-brown), passing into warm sepia on the hindneck, and into cinnamon on the sides of the head; chin and upper throat white, sometimes washed with cinnamon or buffy laterally; lower throat and breast dull neutral gray, more or less washed with buffy, and passing into pale buff on the chest and abdomen; flanks variegated with black subterminal and buffy white terminal bars, and under tail-coverts rich buff, with irregular black bars and lines; back vandyke-brown, passing into sepia posteriorly, and becoming barred with black, the bars increasing in width posteriorly, and followed by buffy white terminal bars on each feather; scapulars, wing-coverts, and tertiaries sepia, with irregular black and buffy white bars and markings like the lower back; primary-coverts deep or dark neutral gray, unmarked; primaries externally dusky brown, also unmarked; secondaries dusky or grayish brown, with irregular buffy spots on the outer webs, giving a barred effect to the closed wing; under wing-coverts grayish white, the outer ones dusky; "feet and legs coral pink."

Female similar, but much more richly colored throughout, the pileum and hindneck rich chestnut-brown, with obscure black barring; back carob-brown, with the scapulars, tertiaries, and lower back conspicuously barred with black and buffy white, the latter color passing into rufescent anteriorly, this barring much heavier than in the male; lower throat and breast strongly shaded with buffy, and chest and under parts also rich buffy (between cinnamon-buff and clay-color).

MEASUREMENTS.

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Tarsus.
71456	¹ (♂)	Bonda	168	50	28	47
9206	² ♂	Bonda	166	51	28.5	43
3706	² (♀)	Bonda	167	52	28	45
5001	³ "♂" (= ♀)	"Santa Marta" (1800 ft.)....	165	46.5	31	46

The difference in color of the sexes corresponds to that in *C. soui* and other species, and it is pretty certain that No. 5,001 of the above table was wrongly determined. This is the specimen which Mr. Bangs says "agrees exactly with the description of the species" [*columbianus*], but a careful comparison of the present series with the description in question discloses too many discrepancies to permit the acceptance of this statement. Count Salvadori's descriptions of the various forms of this difficult group are unusually full and accurate; judging by this circumstance, it is scarcely possible that his type of *columbianus* could have been the same as the Santa Marta bird. He compares his bird with *C. boucardi*, whereas the Santa Marta form is more closely related to *C. cinnamomeus* of Central America and *C. dissimilis* of British Guiana. From the former it differs in its very much paler under surface, with grayer throat and breast, more rufescent and more uniform back, and more rufescent pileum; from the latter it differs in its paler under surface and the conspicuous buffy barring of the wings and back. Messrs. Brabourne and Chubb (*Annals and Magazine of Natural History* (8), XIV, 1914, 322) have described a tinamou from Venezuela under the name *Crypturus cinnamomeus spencei*, the diagnosis of which, however, scarcely fits our bird, which we therefore have no alternative but to describe as new. Nothing is on record concerning its haunts or habits. All four of the known specimens came from the Tropical Zone in the vicinity of Santa Marta. Unfortunately Mr. Carriker failed to meet with the species.

***Cryptuornis adpersus* (Temminck).**

(?) *Crypturus adpersus* BONAPARTE, Tabl. parall. ordre Gallinacées, 1856, 12, 16 ("Santa Marta"; crit.).—SALVADORI, Cat. Birds Brit. Mus., XXVII, 1895, 529 ("Santa Marta"; crit.).

Without examination of the specimen upon which the above record is based

¹ Collection American Museum of Natural History.

² Collection Carnegie Museum.

³ Collection E. A. and O. Bangs.

it would be idle to hazard an opinion, beyond observing that it could scarcely be either *C. adspersus* or *C. idoneus*.

Family ODONTOPHORIDÆ. QUAIL.

67. ***Eupsychortyx cristatus cristatus*** (Linnæus).

Eupsychortyx cristatus cristatus TODD, Auk, XXXVII, 1920, 214 (Rio Hacha; crit.).

Eight specimens: Rio Hacha and Fonseca.

The capture of these birds extends the range of this species to the Goajira Peninsula and Rio Rancheria Valley in Colombia, where the conditions are similar to those it enjoys in Venezuela. The specimens are not typical, however, showing unmistakable signs of admixture with the *leucopogon* strain. Males have rather more antique brown feathers in the superciliaries than is usual with *cristatus*, while in females the buffy color of the under parts is paler, and the markings of the throat tend to streaks rather than to scale-like feather-edgings.

This quail is an abundant bird in the scrub around Rio Hacha, especially along the river in the more fertile and to some extent irrigated lands.

68. ***Eupsychortyx leucopogon littoralis*** Todd.

Eupsychortyx leucopogon (not *Ortyx leucopogon* Lesson) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 127 (Bonda).

Eupsychortyx cristatus littoralis TODD, Proc. Biol. Soc. Washington, XXX, 1917, 6 (Mamatoco; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, VI, 1917, 147 (reprint orig. descr.).

Colinus cristatus littoralis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 198, in text (Bonda; crit.).

Eupsychortyx leucopogon littoralis TODD, Auk, XXXVII, 1920, 211, pl. V, fig. 7 (Santa Marta localities and references; diag.; crit.).

Fifteen specimens: Bonda, Cacagualito, Mamatoco, Gaira, and Santa Marta.

As shown by the writer in the monographic paper above cited, this form has all the ear-marks of a hybrid between *E. cristatus cristatus* and *E. leucopogon decoratus*, showing the excessive amount of individual variation which such a hybrid might be expected to do. Such an explanation of its characters, however, seems inadmissible in view of the circumstance that its range is cut off to the eastward from contact with that of *cristatus* by the strip of Tropical Zone forest which

reaches right down to the coast, while the high Sierra Nevada would constitute a sufficient barrier to its spread to the southeast. Dr. Allen referred Santa Marta examples to *leucopogon*, but comparison with authentic specimens of that form as well as of *leucotis* indicated that they were distinct from either, and they were accordingly provided with a name by the writer in 1917. At that time their true relationship was not perceived, and they were considered to be a race of *cristatus*, whereas a study of the entire group makes it evident that they are much more nearly allied to *leucopogon* instead.

The Santa Marta Crested Quail is found commonly over the whole of the lowlands, wherever these are suited to its needs. It is most numerous in the drier parts of the coastal plain, and does not ordinarily range higher up than Cacagualito (1,500 feet), where it was taken by Mr. Smith's collectors. It is hunted very little, there being few foreigners in Santa Marta who care for this sport, while the natives shoot it only occasionally, when they can get a "pot-shot."

69. ***Eupsychortyx leucopogon decoratus* Todd.**

Eupsychortyx leucopogon decoratus TODD, Auk, XXXVII, 1920, 210 (Fundación).

One specimen: Fundación.

The single specimen of quail collected by the junior author at Fundación, in the southwestern part of the Santa Marta region as here understood, proves to be referable to this recently described form, the range of which includes the lower valleys of the Magdalena and Sinu Rivers. The Fundación specimen is not quite so richly colored as the type, but clearly belongs with it.

70. ***Odontophorus atrifrons* Allen.**

Odontophorus atrifrons ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 127 (Valparaiso; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—DUBOIS, Syn. Avium, II, 1902, 822 (Valparaiso, in range; ref. orig. descr.).—BRA-BOURNE and CHUBB, Birds S. Am., I, 1912, 14 (ref. orig. descr.; range).

Six specimens: Cincinnati, Cerro de Caracas, and Heights of Chirua.

The type of this very distinct *Odontophorus* has hitherto been unique. The present series agree very closely with the original specimen, allowing for the usual range of variation in this genus. The scapulars and tertiaries are tipped with triangular buffy spots, not

mentioned in Dr. Allen's description. Females are smaller than males, and much more rufescent, especially below.

It is obviously the Santa Marta representative of the recently described *Odontophorus variegatus* (*Proceedings Biological Society of Washington*, XXXII, 1919, 116), from the Eastern Andes.

This is a Subtropical Zone species, found only in the dense forest between 4,000 and 9,000 feet, but is a very rare bird everywhere within its range. Mr. Smith's collector secured a single specimen at Valparaiso (Cincinnati), where also most of those taken by the writer were secured. Its call is almost identical with that of the Wood Rail (*Aramides cajanca chiricote*), for which, indeed, it was always mistaken until on one occasion when collecting on the Cerro de Caracas, where one of the birds was secured in the very act of uttering this call. It is a loud rattling note, and can be heard for some distance through the forest. The bird is more often met with in pairs than in small flocks, and is at all times exceedingly shy.

Family CRACIDÆ. CURASSOWS.

71. *Chamæpetes sanctæ-marthæ* Chapman.

Chamæpetes goudoti (not *Ortalida goudotii* Lesson) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (El Libano and Valparaiso).

Chamæpetes sanctæ-marthæ CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 141 (El Libano; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 244 (ref. orig. descr.).

Twenty-six specimens: El Libano, Las Taguas, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, Cincinnati, San Lorenzo, Cerro de Caracas, Paramo de Mamarongo, San Miguel, and Heights of Chirua.

Although obviously related to *C. goudotii*, this species is very distinct, and only confused with that form by Dr. Allen because of the inadequacy of the description in Volume XXII of the *Catalogue of the Birds in the British Museum*. Upon the receipt of topotypical material from the interior of Colombia Dr. Chapman at once recognized the distinctness of the Santa Marta bird and provided it with a name.

Two chicks (Nos. 8,802-3), secured April 23, may be thus described: general color chocolate-brown, below paler; middle of breast and abdomen, and a short line on the flanks buffy white; superciliaries, beginning in front of the eye and joining behind to form a collar around

the hindneck, rusty buff, enclosing a crown-patch of rich chocolate; forehead, lores, chin, and sides of head sooty black; throat washed with sooty; sides of the head densely feathered.

In the adult the iris is "carmine; feet bright salmon red; bill black; bare skin of sides of head bright cobalt blue." The series includes several young birds (July 13-21), distinguished by their smaller size, duller colors, and incompletely feathered throats.

This species is characteristic of the Subtropical Zone of this region, to which it is confined, being largely abundant on the San Lorenzo as well as in the Sierra Nevada between 5,500 and 9,000 feet, wherever forest is present. Curiously enough, Mr. Brown failed to meet with it, while Mr. Smith's collectors secured a good series. Unlike the species of *Penelope*, it feeds much on the ground, from which it is more apt to be flushed than from the trees. It has a peculiar rattling, clucking call-note, very different from that of *Penelope*. When disturbed it more often endeavors to escape by concealment than by flight.

72. *Ortalis garrula* (Humboldt).

Ortalis garrula GRAY, List Spec. Birds Brit. Mus., V, 1867, 12 ("New Granada").—SCLATER and SALVIN, Proc. Zool. Soc. London, "1870," 1871, 539 ("Santa Marta").

Ortalis garrula OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 515 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Bonda).

Additional records: Donjaca (Carriker).

Eight specimens: Mamatoco, Fundación, and Trojas de Cataca.

Considerable variation is shown in this series, some specimens being more rufescent, others more grayish, in general coloration. November birds are not so purely white below.

A species characteristic of the littoral Tropical Zone, fairly common in the lowlands from Santa Marta southward along the coast to the Ciénaga Grande, going inland as far at least as Fundación. It is clearly a form of the lower Magdalena basin, as indicated by the available extralimital records. Invariably it keeps to the thickest and most impenetrable cover, preferring open woodland where there is a dense undergrowth of scrub and vines. It is very hard to shoot on account of its shyness and the character of its haunts.

Three eggs sent in by Mr. Smith are labelled Bonda, April 12. They are pale creamy white in color, the shell with a conspicuous granular texture, and average 60×40 mm.

73. *Ortalis ruficrissa* (Sclater and Salvin).

Ortalis ruficrissa SCLATER and SALVIN, Proc. Zool. Soc. London, "1870," 1871, 538, footnote (Valle de Upar; orig. descr.; type now in coll. Brit. Mus.).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 137 (range).—GIEBEL, Thes. Orn., II, 1875, 765 ("Santa Marta"; ref. orig. descr.; syn.). *Ortalis vetula* (not *Penelope vetula* Wagler) OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 512 (Valle de Upar; crit.). *Ortalis ruficrissa* BRABOURNE and CHUBB, Birds S. Am., I, 1912, 12 (ref. orig. descr.; range).—MILLER and GRISCOM, Auk, XXXVIII, 1921, 49, 50 (Dibulla; crit.).

One specimen: Dibulla.

Mr. Ogilvie-Grant relegates this name to the synonymy of *O. vetula* without any misgivings, but as he declines to recognize any of the geographical variants of this species, several of which at least are obviously perfectly valid races, as shown by the material in our collection, undue importance need not be attached to this conclusion. Up to the present time this form appears to have been known only from the type, described by Sclater and Salvin in 1871, and the acquisition of a second specimen is therefore of some interest. Messrs. Miller and Griscom, who have recently handled this specimen, have reached the conclusion that the form which it represents should be regarded as specifically distinct, although obviously close to *O. vetula*. It is certainly very distinct from *O. vetula intermedia*, differing therefrom in its white-tipped tail, in which respect it resembles *O. vetula vetula*, but the white tips are broader, and the upper parts in general, flanks, and crissum are much more rufescent. With *O. cinereiceps*, from the intervening country of Costa Rica, it requires no comparison.

"Mr. Joad, F. Z. S., obtained two examples of this *Ortalis* in December, 1863, during his expedition in the vicinity of S. Martha. Only one skin was preserved, which is now in the collection of Salvin and Godman," whence it later went to the British Museum. A single male was taken by the writer at Dibulla, April 28, 1914, and the species was common at that point. It proved to be a common and characteristic bird in the region traversed by the writer in July, 1920, east of the mountains, having been recorded at Arroya de Arenas, Loma Larga, Fonseca, and Badillo. Several specimens were shot, but unfortunately not preserved. It seems to replace *O. garrula* on this side of the Sierra Nevada, extending around the mountains as far at least as Valle de Upar, where the type-specimen was taken.

74. *Penelope colombiana* Todd. (Plate II).

Penelope argyrotis (not *Pipile argyrotis* Bonaparte) SCLATER and SALVIN, Proc. Zool. Soc. London, "1870," 1871, 528 ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (El Libano).

Penelope colombiana TODD, Ann. Carnegie Mus., VIII, 1912, 213 (Las Taguas [type-locality], Valparaiso, and Cincinnati; orig. descr.; type in coll. Carnegie Mus.; meas.; crit.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 162, footnote (Santa Marta [region]; ref. orig. descr.; range).

Additional records: Chirua (Brown).

Twenty-five specimens: Valparaiso, Cincinnati, Las Taguas, Las Vegas, San Lorenzo, and San Miguel.

"This fine new species has heretofore been confused with *Penelope argyrotis* (Bonaparte) of northern Venezuela, from which it is perfectly distinct, as shown by a comparison of specimens. In *P. argyrotis* the feathers of the crest are much broader, blunter, and browner, and only those growing on the forehead are margined with grayish white, while in the new species these feathers are linear and acuminate, and all margined with grayish white for their entire length. Moreover, the grayish white superciliary and malar stripes, so conspicuous in *P. argyrotis*, are entirely wanting in *P. colombiana*, these parts being almost the same as the crown. In the latter, also, the feathers of the neck and mantle are more conspicuously edged (laterally) with white, and the middle rectrices are decidedly more coppery, while all are broadly tipped with chestnut, instead of narrowly tipped with buffy rufous, as in *argyrotis*. The abdomen and tibiae are also decidedly more rufescent than in the latter form.

"Bonaparte's original description of *Pipile argyrotis* (*Comptes Rendus de l'Académie des Sciences*, XLII, 1856, 875) is very brief and unsatisfactory, but the species was later identified by Messrs. Sclater and Salvin (*Proceedings Zoölogical Society of London*, 1870, 528) from an examination of some of his authentic specimens. Meanwhile it had been given two other names, *Penelope montana* Reichenow (*Tauben*, 1862, 151, ex Lichtenstein, MS.), and *Penelope lichtensteinii* Gray (*Proceedings Zoölogical Society of London*, 1860, 269), both based upon material from Venezuela."

Contrary to the surmise advanced in the original account of this species (quoted in part above), it proves to be peculiar to the Santa

Marta region, specimens from the region to the southward turning out to be *P. argyrotis*. The series includes a chick (No. 41,770, Cincinnati, April 7), which is buffy brown below, the throat grayish white, the abdomen dull white; wings dusky, with a buffy spot at the tip of each feather; upper parts varied with two shades of brown, the top of the head brownish black, enclosing an irregular patch of chestnut; tail varied with chestnut and black. Nos. 42,116 (June 2) and 42,424 (July 6) are older birds, beginning to show the adult characters, the general coloration duller, however. Adults are fairly uniform in their characters.

Like *Chamaepetes sancta-martae*, this *Penelope* is essentially a Subtropical Zone species, but ranges a little lower down, being found commonly as low as 3,000 feet, and extending up to 6,000 feet, rarely higher. It seems to keep in the trees most of the time, seldom being flushed from the ground.

75. *Penelope æquatorialis* Salvadori and Festa.

Penelope cristata (not *Meleagris cristata* Linnæus) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Bonda).—CARRIKER, Ann. Carnegie Mus., VI, 1910, 382 (Santa Marta [region]; crit.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 195 (Bonda; crit.).

Twelve specimens: Las Tinajas, Bonda, Don Diego, and Minca.

These agree with Costa Rican specimens, and are very uniform in their characters.

On the change of name for this species consult Chubb, *Ibis*, 1919, 16.

This species is a Tropical Zone form, ranging far below *P. colombiana*. It is found from sea-level up to about 2,500 feet, but is more abundant in the coastal plain, and especially in the humid forests of the coast to the northeast of Santa Marta. It was particularly numerous at Don Diego; in fact, nowhere has the writer seen any species of this family so abundant as was this one at that point. As many as forty or fifty birds could be encountered in a half day's tramp through the woods. It was very abundant also at Valencia, in the valley of the Rio Cesar, in early August, 1920, and was noted as far east as Loma Larga. Only rarely is it seen on the ground, feeding as it does more on fruit and berries in the tree-tops. The margins of lagoons, such as abound in these lowland forests, are one of its favorite haunts.



Penelope colombiana Todd, ♂
(One-fourth natural size)

Penelope marail (Müller).

Penelope greyii GRAY, Proc. Zool. Soc. London, 1866, 206, pl. 22 ("Santa Marta"; orig. descr.; type in coll. Brit. Mus.; crit.).—GRAY, List Birds Brit. Mus., V, 1867, 7 ("Santa Marta").—GRAY, Hand-List Birds, II, 1870, 250 (ref. orig. descr.; range).—SCLATER and SALVIN, Proc. Zool. Soc. London, "1870," 1871, 523 ("Santa Marta"; diag.; crit.).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 136 (range).—HELLMAYR, Abhand. K. Bayerischen Akad. Wiss., II Kl., XXII, 1906, 689, in text (crit.).

Penelope jacupeba OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 494 ("Santa Marta").

The name *Penelope greyii* was based on an individual received alive in the Gardens of the Zoölogical Society of London in July, 1865, but which soon died, and was thereupon presented to the British Museum. It was named after "Mr. Edward Greey, F. Z. S., to whom the Society is indebted for this and other interesting novelties from Sta Martha." The description and plate indicate that the bird in question is no other than that now called *Penelope marail*; the true habitat of which is eastern Venezuela, Guiana, and lower Amazonia. It is practically certain that the bird could not have come originally from the Santa Marta region.

76. Crax annulata Todd.

Crax incommoda (not of Sclater, 1875) SCLATER, Trans. Zool. Soc. London, X, 1879, 544, pl. 93 ("South America").

Crax pinima (not of von Pelzeln) OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 477, part (descr.; crit.).

Crax annulata TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 170 (Don Diego; orig. descr.; type in coll. Carnegie Mus.).

Two specimens: Don Diego.

Description.—Adult male: black, with a dark greenish gloss, as in *C. alberti*; lower abdomen, flanks, and under tail-coverts white; all the rectrices except the central pair tipped with white (10–20 mm. wide); greater and median wing-coverts and feathers of upper abdomen and tibiae with narrow and indistinct white tips; crest composed of feathers with spatulate, recurved tips, all except the longest median ones with a small bar or two opposite spots of white on the narrowest part. Wing, 350; tail, 319; bill, 40; tarsus, 101.

Adult female: black, with a dark greenish gloss, as in the male; rectrices (probably except the central pair) tipped with buffy white; wings and their coverts prominently barred with white or buffy white externally, the bars broadest on the outermost feathers; longer upper tail-coverts with broken and indistinct white barring; under surface, from the chin to the lower breast, broadly barred with white, the bars

on the lower breast very broad and continuous, and strongly tinged with buffy; abdomen and flanks immaculate buffy; tibiae and under wing-coverts black, barred with buffy white; elongated feathers of crest extensively white, the extreme base and terminal fourth black; "iris brown; feet dusky flesh-color; bill black," wing, 348; tail, 317; bill, 44; tarsus, 111.

The female type agrees fairly well with the colored figure of the supposed *Crax incommoda* in the *Transactions of the Zoölogical Society of London*, X, 1879, pl. 93, and with Mr. Ogilvie-Grant's later description of the same specimen. As suggested by the latter author, Sclater was doubtless wrong in referring this particular specimen to his *C. incommoda* (= *C. pinima* von Pelzeln), the type of which was a very different looking bird, as may be seen by comparing the above plate with the figure of the said type in the *Transactions of the Zoölogical Society of London*, IX, 1875, pl. 49. The acquisition of a second specimen showing these peculiarities, coming from a definite locality, would seem to prove this beyond a doubt. The present bird differs from *C. pinima* in having much more white beneath, the barring being carried up to the chin, while there is more white on the crest also. The male gives the impression at first glance of being a miniature of *C. alberti*, but the female is of course very different from the same sex of that form.

The pair of birds upon which the above descriptions are based were taken at Don Diego, January 26, 1914, in the heavy forest at the lower edge of the foothills. The discovery of a second species of *Crax* in this region is an event of unusual interest, the larger birds of the continent being relatively so much better known than the smaller forms.

77. *Crax alberti* Fraser.

Crax alberti SCLATER and SALVIN, Proc. Zoöl. Soc. London, "1870," 1871, 517 ("Santa Marta").—SCLATER, Trans. Zoöl. Soc. London, IX, 1875, 280 ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 127 (Bonda and Naranjo; descr. natal plum.).

The adult male of this fine curassow is a precise counterpart, so far as color alone is concerned, of the Venezuelan *C. daubentoni*. The bill, however, is differently shaped and colored, and the crest is rather better developed. The females (which in this genus seem to furnish better differential characters than the males) of the two forms are

very unlike respectively, that of *C. alberti* being extensively buffy brownish below.

The Albert Curassow is not a common bird anywhere in this region, but is perhaps most numerous around Don Diego, or rather throughout the humid lowlands of the north coast. It appears to belong to the Tropical Zone, being found sparingly in the foothills and lower mountain slopes of the San Lorenzo up to about 4,000 feet, but more commonly below 2,000 feet. In its feeding habits it is mainly terrestrial, and is often flushed from the ground.

Slater and Salvin state that there is a Santa Marta specimen of this species in the Paris Museum, received from M. Bonnacourt. It appears to have an extensive distribution in Colombia outside of the Santa Marta region, but unfortunately there are only a few specimens on record with definite localities attached. Mr. Smith sent in but three examples (one adult and two chicks, taken in July), and Mr. Brown but one.

Family ARAMIDÆ. COURLANS.

78. *Aramus scolopaceus scolopaceus* (Gmelin).

Four specimens: Bonda, Fundación, Gaira, and Trojas de Cataca.

This species (which has apparently not been recorded from Colombia heretofore) was found in small numbers along the shores of the Cienaga Grande and up the rivers flowing into it. Several were seen also in a marshy pasture near Gaira, while Mr. Smith sent in a specimen labelled Bonda. The birds feed on the ground, but when disturbed alight on tall trees.

Family RALLIDÆ. RAILS.

79. *Aramides cajaneus chircote* (Vieillot).

Aramides cajanus (not *Fulica cajanea* Müller) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 125 (Minca).

Five specimens: Mamatoco, La Tigrera, Trojas de Cataca, and Fundación.

These agree perfectly with a series from northern Venezuela, as well as with another from Bolivia. Two Cayenne specimens, however, are obviously different, being more deeply colored throughout, the back and scapulars medal-bronze rather than dark buffy olive. The geographical variation in this species is still imperfectly under-

stood, but on the assumption that the peculiarities of Cayenne skins should prove to be constant (as there is good reason to believe), it is clear that Venezuelan and Colombian examples cannot well be referred to the typical form. Mr. Cory (*Field Museum Ornithological Series*, I, 1915, 296) has lately proposed the name *venezuelensis* for a bird from Encontrados, State of Zulia, Venezuela, which is doubtless the same. In view of the fact that Bolivian specimens are indistinguishable from northern ones, however, it is entirely likely that Vieillot's name *chiricote*, based on the bird of Paraguay, would be available for this pale form. In fact, Mr. Chubb (*Ibis*, 1910, 65) explicitly states that he has compared specimens from Paraguay with others from "New Granada," and finds them identical.²⁶ Under such circumstances we think that Vieillot's name may provisionally be adopted for the form under consideration.

This bird is found throughout the lowlands up to 1,000 feet, but is confined to those parts where there is heavy forest, even although it may be only a narrow strip along some stream. It is not at all abundant in its chosen haunts, and, as usual, is exceedingly shy.

80. *Aramides axillaris* Lawrence.

Aramides axillaris BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 92 (Chirua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 125 (Bangs' reference).—BANGS, Am. Nat., XLI, 1907, 178 (Chirua; meas.).

A single example of this rare wood rail was taken by Mr. Brown at Chirua, March 13, 1899. It was described originally from Barranquilla, Colombia, and is known to range eastward as far as British Guiana, and northward to Mexico.

81. *Neocrex colombianus* Bangs.

Neocrex colombianus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 171 (Palomina; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—SHARPE, Hand-List Birds, I, 1899, 106 (ref. orig. descr.; range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 125 (Bangs' reference).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 25 (ref. orig. descr.; range). *Porzana colombiana* DUBOIS, Syn. Avium, II, 1903, 969 (ref. orig. descr.; range).

This is a very distinct species, described by Mr. Bangs from a speci-

²⁶ Since the above was written, however, Mr. Chubb has recognized the bird from Colombia as distinct (*Ibis*, 1919, 53), but we are unable to follow him in this so far as Santa Marta specimens are concerned.

men collected by Mr. Brown at Palomina, at an altitude of 5,000 feet in the Sierra Nevada, May 22, 1898. For some years the type was unique, but more recently the species has been traced to western Colombia and southward into Ecuador. It was noted by the junior author on several occasions on the Heights of Chirua, but unfortunately none were secured.

82. **Porzana carolina** (Linnæus).

Two specimens: Fundación.

The Sora Rail is a winter resident in this section. It was found in the marsh at Fundación from October 12 to 14, 1915, two birds being taken and about four more seen. The specimens show fresh feathers coming in on the throat and breast.

83. **Creciscus albigularis** (Lawrence).

Porzana albigularis BANGS, Proc. Biol. Soc. Washington, XII, 1898, 157 (Pueblo Viejo), 172 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 125 (Bangs' references).

Additional records: La Concepción (Brown).

Three specimens: Mamatoco and Fundación.

This little rail is found wherever there are marshy grass-lands, from near sea-level up to (according to Mr. Brown) 5,000 feet. It was common in the marsh at Fundación, but hard to secure. It is difficult to say just where Mr. Brown secured his Pueblo Viejo specimen, but probably it was in the lower parts of the savannas.

84. **Ionornis martinicus** (Linnæus).

Eight specimens: Mamatoco, Fundación, and Trojas de Cataca.

A few Purple Gallinules live in a small marsh near Mamatoco, where specimens were secured both by Mr. Smith's collectors and by the writer. At Trojas de Cataca they were common along the lower course of the river, haunting the tall grass and aquatic plants lining both banks. They were most numerous, however, in the marshes at Fundación, where, on October 10, 1915, two nests were found. One contained four eggs and one chick, the other three eggs and two chicks. Upon visiting the nests two days later all the eggs had hatched and the chicks had disappeared. The nests were merely bulky masses of grass placed in a cluster of wild plantain and Pará-grass, about three feet above the water.

Family LARIDÆ. GULLS, TERNS.

85. *Chroicocephalus atricilla* Linnæus.

Eleven specimens: Buritaca and Trojas de Cataca.

Mr. Smith sent in a single specimen from Buritaca, September 19, 1899. It was quite common around the fishing village of Trojas de Cataca, October 5-11, 1913, at which date the adults shot were all in winter dress, while one of the young birds was still in postjuvenile moult. It was not met with at any other place except Cienaga, where a few were seen near the town. The specimens secured appear to belong to the smaller or typical race, as discriminated by Mr. Noble (*Bulletin Museum of Comparative Zoölogy*, LX, 1916, 367), but there is a great deal of individual variation in size, even among our northern specimens from the Atlantic and Gulf coasts.

86. *Phætusa chloripoda* (Vieillot).

Phætusa chloripoda RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VIII, 1919, 541 (Punto Caiman and Trojas de Cataca).

Five specimens: Punto Caiman and Trojas de Cataca.

This large tern was common along the narrow strip of beach between the ocean and the Cienaga Grande, but was seen fishing for food only in the Cienaga, in the sheltered bays and inlets. Specimens are precisely the same as Bolivian examples.

87. *Hydrochelidon nigra surinamensis* (Gmelin).

Six specimens: Trojas de Cataca and Tierra Nueva.

The Black Tern was fairly common on the Cienaga Grande, six specimens being secured on October 10 and 12, 1913, although it was not seen along the sea-beach at Punto Caiman. Evidently the fish offal thrown into the water was the attraction which drew the birds to the vicinity of the fishing village of Trojas de Cataca. Here, as elsewhere in tropical America, it is of course only a winter resident. All the specimens secured proved to be adults just completing the winter plumage by assuming new remiges and rectrices.

88. *Thalasseus*²⁷ *maximus* (Boddaert).

One specimen: Cienaga.

A single immature Royal Tern was shot near the shore of the Cie-

²⁷ On the use of this generic term compare Oberholser, *Proceedings U. S. National Museum*, XLIX, 1915, 517.

naga Grande, not far from the town of Cienaga, October 18, 1913. A few others were seen, but evidently it is not a common species, and is of course a winter resident only.

89. **Thalasseus** sp.

Thalasseus eurygnathus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VIII, 1919, 474 (Buritaca).

One specimen: Buritaca.

A single specimen of a tern in juvenal dress, collected September 19, 1899, appears to belong to some species of this generic group, but in the absence of suitable material for comparison it cannot be certainly identified at present. Mr. Ridgway, who handled the specimen some years ago, indeed referred it to *Sterna eurygnatha* Saunders, but it seems much too small for this species, having a wing only 250 mm. long, and a bill not at all corresponding to the description. These peculiarities may of course be due to the youth of the individual in question, which was probably reared not far away from the locality where it was taken.

Family RECURVIROSTRIDÆ. AVOCETS.

90. **Himantopus mexicanus** (Müller).

Himantopus nigricollis WYATT, Ibis, 1871, 383 (Cienaga).

Five specimens: Punto Caiman and Gaira.

A few were seen around the salt ponds at Gaira on May 21, 1913, while it was fairly common along the sea-beach at Punto Caiman in late September and early October of the same year. Wyatt says that he met with this species in the shallows of a lagoon near Cienaga in December, 1869, and several specimens were taken at the same locality in August, 1913, by the University of Michigan party. Both of the Gaira specimens are birds of the year, one of them so young as to render it very probable that it was hatched in the immediate vicinity. All but one of the Punto Caiman specimens are also immature.

Family SCOLOPACIDÆ. SNIPES, SANDPIPERS.

91. **Bartramia longicauda** (Bechstein).

Bartramia longicauda ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 125 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga).—COOKE, Bull. Biol. Survey, No. 35, 1910, 64 (Cienaga, *ex* Allen).

The only record of the Bartramian Sandpiper for this region per-

tains to a single specimen sent in by Mr. Smith, taken at Cienaga, September 15, 1898. Doubtless this was a transient individual only, the species not being known to pass the winter so far north.

92. **Actitis macularia** (Linnaeus).

Tringoides macularia SHARPE, Cat. Birds Brit. Mus., XXIV, 1896, 468 (Valle de Upar).

Actitis macularia BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 92 (La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 125 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga; La Concepción, *ex* Bangs).—DWIGHT, Auk, XVII, 1900, 371, in text, 375 ([Cienaga], Colombia; plum.).

Three specimens: Bonda, Buritaca, and Fundación.

The Spotted Sandpiper is a winter resident here as elsewhere in tropical America. The Fundación specimen, which was secured August 16, 1913, represents the earliest recorded date of arrival in the fall migration. An example taken at Bonda on February 2 is renewing the remiges by prenuptial moult.

93. **Tringa solitaria solitaria** Wilson.

Rhyacophilus solitarius SALVIN and GODMAN, Ibis, 1880, 178 (Santa Marta).

Helodromas solitarius SHARPE, Cat. Birds Brit. Mus., XXIV, 1896, 444 (Santa Marta).

Totanus solitarius ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga; Santa Marta, *ex* Salvin and Godman).

Eight specimens: Bonda, Cienaga, Mamatoco, and Fundación.

The Solitary Sandpiper is a winter resident in this section. Simons speaks of it as being "common near the seashore and sandbanks of the rivers," which is correct. In fact, it is common wherever conditions are suitable, being found along creeks, irrigation-ditches, ponds and puddles. The earliest recorded date of arrival in the fall is August 15 (1913), the latest spring date is April 18 (1900?).

94. **Neoglottis flavipes** (Gmelin).

Totanus flavipes ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga).

Eight specimens: Bonda, Cienaga, Gaira, Mamatoco, and Punto Caiman.

The Yellow-legs is fairly common in the fall migration in September, being found wherever there is water of any kind. Earliest and latest dates are respectively August 22 (1913) and October 31 (1899).

95. **Neoglottis melanoleuca** (Gmelin).

Totanus melanoleucus SHARPE, Cat. Birds Brit. Mus., XXIV, 1896, 759 (Santa Marta).

One specimen: Rio Hacha.

A flock of about twelve birds of this species was seen along the river at Rio Hacha on May 4, 1914, of which one was secured. This is a date when the bulk of the species is well on its northward way.

96. **Pisobia minutilla** (Vieillot).

Tringa minutilla ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga).

Seven specimens: Cienaga, Don Diego, Punto Caiman, and Gaira.

The Least Sandpiper is a common winter visitor, frequenting mainly the sea-beach and the shores of the Cienaga Grande, there being few other suitable feeding-grounds. It has been taken at Gaira on September 11 (1913) by the writer, and at Cienaga on September 10, (1898) by Mr. Smith's collector.

97. **Pisobia maculata** (Vieillot).

Tringa maculata ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga).

Pisobia maculata COOKE, Bull. Biol. Survey, No. 35, 1910, 35 (Allen's record).

One specimen: Cienaga.

For the Pectoral Sandpiper there are but two records from the Santa Marta region, referring to single examples shot at Cienaga on September 12 and 14, 1898, respectively. Probably it is only a transient here, wintering farther south. According to Cooke the Cienaga record is the only one from Colombia, or rather was at the time it was published, since Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 224) has recently recorded the species from Quibdo, on the Atrato River.

98. **Tryngites subruficollis** (Vieillot).

Tryngites subruficollis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 125 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga).—COOKE, Bull. Biol. Survey, No. 35, 1910, 67 (Cienaga, ex Allen).

Two specimens of this relatively rare sandpiper, shot by Mr. Smith's collector at Cienaga, September 12 and 17, 1898, are the only records for this region. The winter home of the species lies far to the southward, so that these were doubtless transients only.

99. **Ereunetes mauri** Cabanis.

Four specimens: Buritaca and Punto Caiman.

The South American records of the Western Sandpiper are very few indeed, the Caribbean coast apparently being the extreme limit of its range in this direction. There is a single specimen from Buritaca, September 20, 1899, in the collection received from Mr. Smith, and three others taken by Mr. Carriker, at Punto Caiman, September 28 and October 1, 1913.

100. **Ereunetes pusillus** (Linnæus).

Ereunetes pusillus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga).

Four specimens: Buritaca and Rio Hacha.

Mr. Smith sent in two specimens of the Semipalmated Sandpiper from Cienaga, September 12, and three from Buritaca, September 20, 1899. Mr. Carriker shot one at Rio Hacha, May 4, 1914, on the salt plain near the mouth of the river. It is probably a winter resident along the coast.

101. **Micropalama himantopus** (Bonaparte).

Micropalama himantopus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Cienaga).—ALLEN, Auk, XVII, 1900, 364 (Cienaga).—COOKE, Bull. Biol. Survey, No. 35, 1910, 29 (Cienaga, *ex* Allen).

The only record for the Stilt Sandpiper in this region pertains to a single specimen received by the American Museum of Natural History from Mr. Smith, shot at Cienaga, September 13, 1898. The bird is rare, and its winter range is imperfectly known, but probably includes this region.

102. **Capella jamesoni** (Bonaparte).

Gallinago jamesoni SHARPE, Cat. Birds Brit. Mus., XXIV, 1896, 661 (Sierra Nevada [de Santa Marta]).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 183 (Sharpe's reference).

One specimen: Taquina.

The specimen agrees with an example from Ecuador collected by Mr. Samuel N. Rhoads, but the bill is 86 mm. long instead of 66, as in the other. What the significance of this discrepancy may be cannot be determined at present.

One fine male of this large snipe was shot March 29, 1914, in the same little marsh at Taquina in which the Wilson Snipe were taken.

No more were there, as the whole tract was gone over as with a comb. Another individual was seen on the Paramo de Chiriqua at about 14,000 feet altitude, where it was flushed twice, shot at once, and in the end escaped quite unharmed. The Paramo Zone is of course the regular range of this species, but towards the end of the dry season, when the paramos become so dry, the birds move downwards in search of food. This would account for the presence of the one at Taquina (7,000 feet), as well as for their scarcity on the paramos at the time of the writer's visit.

103. *Capella delicata* (Ord).

Three specimens: Taquina and Pueblo Viejo.

One was shot at Pueblo Viejo on March 17, and two at Taquina, in a bit of grassy marsh on the table-land, on March 29, 1914. In addition it was seen at Fundación in October, and at Cincinatti, also late in October. It is doubtless a winter resident, but is not abundant in this region, as observed in Costa Rica and Venezuela, for instance.

Family CHARADRIIDÆ. PLOVERS.

104. *Charadrius collaris* Vieillot.

Ægialitis collaris SHARPE, Cat. Birds Brit. Mus., XXIV, 1896, 747 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Cienaga).

Eleven specimens: Cienaga, Don Diego, Punto Caiman, Gaira, and Fundación.

This little plover is common along the sea-beach and salt-water lagoons, wherever there are any stretches of sandy beach. Specimens are quite indistinguishable from Bolivian examples.

105. *Charadrius semipalmatus* Bonaparte.

Six specimens: Buritaca, Cienaga, Gaira, and Don Diego.

No. 43,098, September 13, shows moult in progress in the remiges, rectrices, and pectoral band, and Nos. 43,291-2, October 18, show moult in the latter, which is changing to black. But Nos. 44,357 and 44,380, taken much later in the season (January 15 and 16) show no signs of moult, and the pale edgings of the feathers of the upper parts have almost worn off.

The Semipalmated Plover is usually found in company with its relative *C. collaris*, and like it occurs inland as well as coastwise, wherever

suitable conditions, involving shallow water and exposed mud-flats, occur. It is of course only a winter resident.

106. **Pagolla wilsonia crassirostris** (Spix).

Octhodromus wilsonius crassirostris Todd, Ann. Carnegie Mus., VII, 1911, 416, in text (Buritaca; crit.).

Additional records: Cienaga (Univ. Mich. Exp.).

Five specimens: Buritaca and Punto Caiman.

On the name of this form consult the present writer's remarks in the above reference. Two of the above series (Nos. 43,138 and 43,196) obviously belong to the southern rufous-naped form. A third specimen (43,139), shot at the same time of year (September) is excessively worn and faded. The other two skins are in immature plumage, indistinguishable from specimens shot in the Isle of Pines. There is nothing to show that the two forms are distinguishable at this stage, and the presumption is that all of the above specimens belong to the resident race.²⁸

This plover appears to be rare, and was met with only on the beach at Punto Caiman from September 28 to October 2, 1913. In addition Mr. Smith sent in a single specimen from Buritaca, collected September 18, 1899.

107. **Belonopterus cayennensis cayennensis** Gmelin.

Two specimens: Fundación.

A single pair of this species (the only ones observed) were in the drier part of the marsh at Fundación. The specimens compare favorably with others from the Caura River, Venezuela, assumed to be typical *cayennensis*. It was not recorded again until the summer of 1920, when a single pair were noted in a marshy place along the river, several miles inland from Rio Hacha. On the savannas between Valencia and Camperucho, however, it was found to be abundant a little later, in August.

²⁸ Since the above was written Mr. Ridgway (*Bulletin U. S. National Museum*, No. 50, 1919, 113) has described the Wilson Plover of the northern coast of South America under a new name, *cinnamomina*, quoting *crassirostris* of Spix as doubtfully the same. We see no necessity for renaming the form in question under the circumstances, nor can we agree with Mr. Peters (*Bulletin Museum of Comparative Zoölogy*, LXI, 1917, 405) that *rufinucha* is the proper name for the West Indian bird, even if distinct. It will be noted that the name *rufinucha* has been repudiated by Mr. Ridgway himself.

Family HÆMATOPODIDÆ. OYSTER-CATCHERS.

108. *Hæmatopus palliatus palliatus* Temminck.

One specimen: Rio Hacha.

A single specimen, the only one seen, was shot at the mouth of the river at Rio Hacha on May 2, 1914. It has an extensive distribution on the Atlantic coast of tropical America, but so far as we are aware this seems to be the first record for Colombia.

Family ÆDICNEMIDÆ. THICK-KNEES.

109. *Ædicnemus bistriatus vocifer* L'Herminier.

This species is admitted to the list on the strength of having been observed (although not actually collected) by the junior author in the savanna region along the trail northeast of Camperucho, where it was common, in company with *Belonopterus cayennensis cayennensis*, on August 8, 1920. A few had been noted at Rio Hacha in July also.

Family JACANIDÆ. JACANAS.

Jacana spinosa spinosa (Linnæus).

Parra gymnostoma (not of Wagler) SCLATER, Proc. Zoöl. Soc. London, "1856," 1857, 283 ("Santa Marta").

Probably the specimen upon which this record was based, like others received through Verreaux, did not come from Santa Marta at all, but from Panama. There are no authentic records for this species from South America (cf. Todd, *Annals Carnegie Museum*, X, 1916, 218-219), although Messrs. Brabourne and Chubb (*Birds of South America*, I, 1912, 44), for reasons which they fail to explain, use the name in place of *J. jacana*—a mistake unfortunately followed by Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 225) in identifying a specimen from La Morelia, Colombia.

110. *Jacana nigra* (Gmelin).

Parra melanopygia SCLATER, Proc. Zoöl. Soc. London, "1856," 1857, 283 ("Santa Marta"; orig. descr.; type in coll. Verreaux; crit.).—GRAY, Hand-List Birds, III, 1871, 70 ("Santa Marta," in range).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 142 (range).—VON BERLEPSCH, Journ. f. Orn., XXXVII, 1889, 320 ("Santa Marta," ex Sclater).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, III, 1903, 341 ("Santa Marta," in range).

Parra hypomelana SCLATER, Proc. Zoöl. Soc. London, "1856," 1857, 283 ("Santa Marta").—GRAY, Hand-List Birds, III, 1871, 70 ("Santa Marta," in range).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 142 (range).

Jacana nigra ELLIOT, Auk, V, 1888, 296 ("Santa Marta"; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 126 (Cienaga).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 226 ("Santa Marta"; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VIII, 1919, 15 (Santa Marta localities and references; meas.).

Jacana melanopygia BRABOURNE and CHUBB, Birds S. Am., I, 1912, 45 (ref. orig. descr., range).

Seven specimens: Cienaga, Mamatoco, Don Diego, and Fundación.

This species has had an eventful nomenclatural history, having been described under at least three specific names at different times. Although Gmelin (*Systema Naturæ*, I, 1788, 708) erroneously ascribes it to Brazil, it is clear both from his description and some of the references he quotes that he had in mind this species and no other, which is now known to be confined to the Caribbean coast-region of Colombia, ranging thence northward into Panamá. The species remained unrecognized for many years, until it was figured by Gray (*Genera of Birds*, III, 1846, 589, pl. 159) under the name *Parra hypomelæna*. In 1857 Sclater, in the course of a review of the genus, described specimens from the Verreaux Collection, and purporting to come from Santa Marta, as a new species, *Parra melanopygia*, which he distinguished from *P. hypomelæna* mainly by the purplish brown color of the interscapular region. It is significant that Sclater records both *hypomelæna* and *melanopygia* from Santa Marta, while Salvin (*Proceedings Zoölogical Society of London*, 1870, 218) records both from Veragua, and remarks that probably a larger series of specimens would serve to connect the two forms, not only with each other, but also eventually with *P. intermedia* Sclater. In his review of the group published in 1888 Elliot refers *melanopygia* to *nigra* as a synonym without hesitation, but it is clear from his remarks that he did not have before him a specimen representing the former. Dr. Chapman seeks to keep the two forms distinct, saying that all his specimens from the Cauca Valley are *melanopygia* and all from Santa Marta are *nigra*, and intimating that probably the type of the former did not come from Santa Marta at all. He admits, however, that a specimen from Calamar, near the mouth of the Magdalena River, is intermediate between the two forms, while two other specimens from the same locality are *nigra*.

We have one specimen (No. 9,027, Bonda) which clearly represents *melanopygia*, having the scapulars and interscapulars deep maroon, al-

most as in Venezuelan specimens of *J. jacana*. The under wing-coverts are black, although Sharpe (*Catalogue of the Birds in the British Museum*, XXIV, 1896, 84), describing specimens from Panama, says that these parts are deep maroon, only the marginal lower coverts and lower primary-coverts being black. While the balance of our series are easily referable to *nigra*, several of them show more or less distinct traces of maroon on the scapulars. In short, a summary of the evidence available goes to show that not only are the characters of *melanopygia* most variable, but also that it occurs together with typical *nigra* at many (probably all) places throughout the range of the latter. The presumption is strong that it is merely a color-phase of *nigra*, as suggested by Salvin in 1870. The case has many points in common with that of *Ixobrychus exilis* and *I. neoxenus*. There is also a possibility that *J. nigra* itself may be merely a black phase of *J. jacana*, in which case the individuals showing maroon feathers on the upper parts ("*melanopygia*") would be considered individual intermediates, such as occur occasionally in other forms having two distinct color-phases. We are not inclined to adopt this view of the case at present, however, largely on account of the restriction of *J. nigra* to a definite geographic area, although admitting that this is not an insuperable argument.

A very common bird in the Tropical Zone, wherever there are freshwater marshes or sluggish streams choked with aquatic plants.

Family COLUMBIDÆ. PIGEONS.

III. *Oreopeleia linearis infusca* (Bangs).

Geotrygon linearis (not *Columba linearis* Prévost and Knip) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 157 (Pueblo Viejo).

Geotrygon linearis infusca BANGS, Proc. New England Zool. Club, I, 1900, 108 (Chirua [type-locality], La Concepción, and Pueblo Viejo; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 128 (Valparaiso, El Libano, and San Lorenzo).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 161, in text (crit.).

Geotrygon infusca BRABOURNE and CHUBB, Birds S. Am., I, 1912, 21 (ref. orig. descr. [error]; range).

Twenty specimens: El Libano, San Lorenzo, Las Vegas, Cincinnati, Las Taguas, and Pueblo Viejo.

The present form was discriminated by Mr. Bangs after comparing his Santa Marta specimens with four "Bogotá" skins in the collection of the Academy of Natural Sciences of Philadelphia. Unfortunately only one of these four skins turned out to be adult, as shown upon re-examination, so that it became desirable to make comparison with fresh material. Thanks to the courtesy of the authorities of the American Museum of Natural History, this has recently been made possible. It appears that the Santa Marta bird is an easily recognized race of *O. linearis*, differing from the typical form in its generally paler color above and more uniform and more vinaceous-tinged under parts. In *infusca* the whole pileum is paler than in *linearis*, being cinnamon rather than walnut brown, and the occiput in particular is decidedly paler gray; the purplish wash on the upper back is paler also; the lower back and wings are more brownish, less reddish; and the tail is paler. The anterior under parts, which in fully adult *linearis* are more or less washed with gray, are tinged with orange cinnamon in *infusca*. Incidentally the fact is revealed that the character upon which Count Salvadori relies to separate the Venezuelan bird is conspicuously inconsistent. Venezuelan specimens (including several from the Merida region) average a trifle more olivaceous on the lower back and wings than those from the interior of Colombia, but the difference is too slight to take into account.

A young bird (No. 42,125, June 2) is barred with black both above and below, except where the first winter plumage has come in, and the general coloration is darker and duller.

One of the species which is characteristic of the Subtropical Zone, being found more or less commonly at all points on the San Lorenzo, between 4,500 and 7,000 feet. It occurs also in the Sierra Nevada, where it ranges somewhat lower, between 2,000 and 6,000 feet. It is solitary in its habits, and usually stays on or near the ground, perching on a low limb when disturbed. It is very shy, and must be hunted with great caution, because as a rule if it sees the hunter first it is off like a woodcock through the forest, and a successful shot on the wing is next to impossible.

112. *Oreopeleia violacea albiventer* (Lawrence).

Oreopeleia violacea albiventer RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 484 (Cacagualito and Don Diego, in range; meas.).

Two specimens: Cacagualito and Don Diego.

Mr. Smith's collection contains one specimen, a young bird in the barred juvenal dress, taken at Cacagualito on September 25, 1900. A single female was taken by the writer at Don Diego, January 28, 1914, in the heavy forest. Another individual, probably the mate of the one secured, was seen here, but eluded capture. These constitute the first Colombian records for this race, heretofore supposed to be confined to Central America, from Nicaragua to Panama. There is apparently an immense gap in the range of the species, before the typical form is reached in Brazil.

113. *Oreopeleia montana* (Linnæus).

Geotrygon montana ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 128 (Bonda).

Oreopeleia montana RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 478 (Bonda, Don Diego, Don Amo, La Tigrera, and Las Vegas, in range; Allen's reference).

Five specimens: Don Amo, La Tigrera, Las Vegas, and Don Diego.

No characters can be found for distinguishing these from specimens coming from other parts of the extensive range of this species.

A very rare bird, the local distribution of which is not exactly known. It is doubtful if it goes above 3,000 feet, and it is probably more numerous if anything at lower altitudes. At La Tigrera it was found in the heavy woodland which fills the narrow valley of the Tamocal Creek. One pair each were noted at Loma Larga and Valle de Upar, on the eastern side of the Sierra Nevada, during the writer's recent visit to this part. Like the other members of this genus, it keeps on or close to the ground, and is very shy.

114. *Leptotila verreauxi verreauxi* Bonaparte.

Leptotila verreauxi SALVIN and GODMAN, Ibis, 1880, 178 (Minca).—SALVADORI, Cat. Birds Brit. Mus., XXI, 1893, 548 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 128 (Bonda); XXI, 1905, 279 (Bonda; descr. nest and eggs).

Leptotila verreauxi verreauxi CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 142, in text (Santa Marta [region]; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 446 (Bonda, Don Diego, Santa Marta, and "Sierra Nevada, at 2,000 feet," in range; references; meas.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 211, in text (Santa Marta [region]; crit.).

Additional records: Santa Marta (Carriker).

Twelve specimens: Bonda, Don Diego, Minca, and La Tigrera.

The characters shown by this series are very uniform, showing no approach to those of *L. verreauxi occidentalis* of western Colombia. Venezuelan specimens, on the other hand, average darker colored and are possibly separable.

The most abundant and generally distributed (within its altitudinal range) of the entire family in the whole Santa Marta region. Although Simons failed to record it on the southeast side of the Sierra Nevada, the writer found it to be a very common bird there in July and August, 1920, the conditions seeming to be ideal for its presence. It is abundant over the whole of the coastal plain, from Dibulla on the north to Fundación on the south, ascending into the foothills up to about 2,000 feet. Rarely is it found in the heavy forest, although present in the "dry forest" of the foothills back of Santa Marta. Open country, where shrubbery and waste land abound, is much more to its liking. It is nearly always seen on the ground, although when flushed it will usually first alight on a low tree.

Twelve nests with eggs were sent in by Mr. Smith, all from Bonda, March 30 to May 1, and September 10 (two sets), "apparently indicating two breeding periods, a spring and a fall period.

"The nest, placed in the fork of a small tree or shrub, consists of a quite substantial mass of small twigs, the amount varying considerably in different nests. The eggs are nearly pure white, slightly glossy, and vary considerably in size in different sets."

115. *Claravis pretiosa* (Ferrari-Perez).

Claravis pretiosa ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 128 (Minca, Cacagualito, and Mamatoco).

Four specimens: Bonda and La Tigrera.

After again going over our series of this species we are unable to separate the South American birds under the name *livida*, the alleged differences being too slight and too inconstant for recognition. Specimens from western Colombia might possibly be sufficiently different, as claimed by Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 210), but we prefer to follow Mr. Ridgway in this case.

Mr. Smith secured a few specimens of this dove at Bonda, Minca, Cacagualito, and Mamatoco, and the writer shot a single one at La

Tigrera. It had been noted by him only in the lower foothills back of Santa Marta (and is apparently a rare bird in these parts), up to the summer of 1920, when it was again encountered, this time on the other side of the Sierra Nevada, below Loma Larga, and later at Fonseca and Valencia.

116. *Chamæpelia*²⁹ *rufipennis rufipennis* Bonaparte.

Chamæpelia rufipennis SALVIN and GODMAN, Ibis, 1880, 178 (Santa Marta).—SALVADORI, Cat. Birds Brit. Mus., XXI, 1893, 487 (Santa Marta).

Columbigallina rufipennis BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 128 (Bonda, Masinga Vieja, and Cienaga); XXI, 1905, 280 (Bonda; descr. nest and eggs).

Chamæpelia rufipennis rufipennis TODD, Ann. Carnegie Mus., VIII, 1913, 586, 602 (Santa Marta references and localities; crit.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIV, 1915, 367, in text (Santa Marta [region]; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 424 (Santa Marta localities and references; meas.).

Additional records: Fundación (Univ. Mich. Exp.).

Twelve specimens: Bonda, Buritaca, Don Diego, Mamatoco, and Santa Marta.

A young female in juvenal dress is dated October 9. This specimen shows the squamate character of the plumage very distinctly, but at a later stage (first winter plumage), after this light feather-tipping is lost, the bird corresponds very closely to the description of *C. rufipennis caucæ* Chapman (*Bulletin American Museum of Natural History*, XXXIV, 1915, 367). We have specimens from Venezuela answering the description of *caucæ* perfectly, and certainly a much larger series of specimens will be required to demonstrate its validity.

A common bird throughout the lowlands, being much more numerous in fact than *C. passerina albivitta*, and present in the forested portions wherever clearings have been made. Mr. Brown secured specimens at Pueblo Viejo, Chirua, and La Concepción, localities on the north slope

²⁹ The International Commission on Zoölogical Nomenclature (*Smithsonian Institution Publication* No. 2256, 1914, 145) has decided that the original orthography of this particular generic name is to be altered to conform to what was the evident intention of its proposer. This decision, although by no means unanimous, implies that an author has the right to correct a typographical error or *lapsus calami* affecting a name proposed by him in an earlier publication, even if not "evident" at the time. Such a decision denotes a gratifying tendency to use common sense in applying the rules of nomenclature.

of the Sierra Nevada lying at altitudes of from 2,000 to 3,000 feet. Farther south in Colombia it ranges still higher up.

Mr. Smith sent in "five nests, with two eggs each, collected at Bonda, April 9 and June 2, 3, and 5." They are similar to those of *C. passerina albivitta*.

117. *Chamæpelina passerina albivitta* Bonaparte.

Chamæpelina passerina (not *Columba passerina* Linnæus) WYATT, Ibis, 1871, 383 (Santa Marta).

Columbigallina passerina pallescens (not *Chamæpelina pallescens* Baird) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").

Columbigallina passerina granatina (not *Chamæpelina granatina* Bonaparte?) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 128 (Bonda); XXI, 1905, 280 (Bonda; descr. nest and eggs).

Chamæpelina passerina albivitta TODD, Ann. Carnegie Mus., VIII, 1913, 551, 597 (Santa Marta localities and references; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 408 (Santa Marta localities and references).

Fourteen specimens: Bonda, Mamatoco, Gaira, Dibulla, and Rio Hacha.

Our specimens agree with those from Cartagena, the type-locality of this race, in pale coloration, sharply bicolor bill, etc.

This little dove is distributed over the whole of the lowlands from Fundación to Rio Hacha, entering also the Rio Rancheria-Rio Cesar Valley, but is more numerous in the semi-arid portions, although not very abundant anywhere in this region. It is strictly a species of the littoral Tropical Zone, seldom going above the coastal plain, so that the specimen collected by Mr. Brown, and purporting to have been taken on the Paramo de Macotama, as recorded (*l.c.*) by the senior author, is certainly incorrectly labeled. There is one specimen in the collection of the American Museum of Natural History which was taken as high as Minca (altitude 2,000 feet). Mr. Smith sent in three sets of eggs to the same institution, taken at Bonda on April 23 and 29, and June 3. "The nests consist of a mass of small twigs and plant stems, placed in the fork of a branch or shrub. The eggs are clear white, and measure about 21×16 ."

118. *Scardafella squammata ridgwayi* Richmond.

Scardafella squamosa (not *Columba squamosa* Bonnatere) SALVIN and GODMAN, Ibis, 1880, 178 (Valencia).—SALVADORI, Cat. Birds Brit. Mus., XXI, 1893, 464 (Valencia).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (Salvin and Godman's reference).

Eighteen specimens: Rio Hacha, Dibulla, and Gaira.

These are indistinguishable from specimens from San Esteban and the Caura River, Venezuela. There is some variation in the intensity of the squamate markings above and below.

In common with Mr. Hellmayr (*Novitates Zoologicae*, XV, 1908, 92), we fail to see why Lesson's name *squamata* should not be used for this species.

This dove belongs properly to the arid Tropical Zone, which invades our region from the northeast. It is mainly confined to the Goajira Peninsula, running along the coast as far as Dibulla at least, and extending around the Sierra Nevada to the southward, as shown by Simons' record for Valencia, which the writer has recently confirmed. It is primarily a bird of the semi-arid and semi-desert regions, as already said. There is one record for Gaira, however, and in December, 1918, three individuals were seen beside the road about a mile from Santa Marta. They were observed during that month on several occasions, always near the same place, but since then have not been noted. It is rarely observed perching off the ground, except when going to roost for the night.

Zenaida ruficauda ruficauda Bonaparte.

Zenaida pentheria BONAPARTE, *Consp. Avium*, II, 1854, 84 ("Santa Marta"; orig. descr.; type in coll. Paris Mus.).—BONAPARTE, *Compt. Rend.*, XL, 1855, 98 (descr.), 220 (in list of species).

Zenaida ruficauda SALVADORI, *Cat. Birds Brit. Mus.*, XXI, 1893, 387 (crit. on type).

Bonaparte says that his type of *Zenaida pentheria* was a Santa Marta specimen collected by Fontainier, and Count Salvadori, who has examined the specimen in question, refers it to *Z. ruficauda*, remarking on its large size. Dr. Chapman has shown that typical *ruficauda* is a form of the Temperate Zone, confined (so far as known) to the Eastern Andes of Colombia, and while, in common with other species of that zone, it might reappear in the Santa Marta region, it is unlikely that Fontainier secured it there, judging by analogy. At any rate, no other collector has ever met with a *Zenaida* in this region, so that it seems best to relegate the record to the hypothetical list for the present.

119. *Crossophthalmus gymnophthalmos* (Temminck).

Columba gymnophthalma ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 129 (Taganga; crit.).—HARTERT, *Nov. Zööl.*, XXIII, 1916, 341 (Santa Marta region, *vide* Todd and Ridgway).

Crossophthalmus gymnophthalmos RIDGWAY, *Bull. U. S. Nat. Mus.*, No. 50,

VII, 1916, 321 (Taganga, Gaira, and Donjaca, in range; meas.; Allen's reference).

Additional records: Cienaga (Univ. Mich. Exp.).

Three specimens: Gaira and Donjaca.

Besides the above we have examined a specimen from Barranquilla, Colombia, two from Tocuyo, Venezuela, and five from Curaçao. There is no constant difference between specimens from the latter locality and those from the mainland, although individual, age, and sexual variation is obvious. The proper habitat of this species, which is still very rare in collections, was discovered by Dr. Hartert, in 1892, to be the Dutch West Indies, and in combating the use of the name *Columba corensis* Jacquin for it he undertook to show that it was unknown on the mainland. That this is not the case is proved by the specimens in our collection, which had just been duly recorded by Mr. Ridgway, while the Taganga record had been published by Dr. Allen in 1900. On calling Dr. Hartert's attention to this matter he at once published a correction. But the possibility that Dr. Hartert may still be in error regarding the application of Jacquin's name is increased by reason of the fact that the U. S. National Museum has recently received a mutilated but easily identifiable specimen of the present species from the Coro Peninsula in Venezuela. We prefer to retain Temminck's name, however, on the principle that a certainty is better than an uncertainty.

Mr. Smith sent in a single specimen from Taganga. The only place on the west coast where the writer has seen this bird is along the beach between Gaira and Donjaca, where the country is very dry, with a great deal of giant cactus growing. It is doubtless found along the coast as far as the mouth of the Rio Piedras in small numbers. It was not uncommon at Rio Hacha and Fonseca, on the edge of the arid Goajira Peninsula. In Venezuela and Curaçao it occurs only in arid sections where giant cacti abound, being strictly a bird of the arid Tropical Zone.

The University of Michigan Expedition obtained a pair at Cienaga, August 23, 1913.

120. *Lepidœnas speciosa* (Gmelin).

Columba speciosa ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (Bonda).

—CARRIKER, Ann. Carnegie Mus., VI, 1910, 392 (Santa Marta [region]; crit.).

Lepidœnas speciosa RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 316

(Bonda, Minca, Cincinnati, and Las Taguas, in range; meas.; references).

Eight specimens: Bonda, Minca, Cincinnati, Agua Dulce, and Las Taguas.

The series shows the usual wide range of variation for this species.

This beautiful pigeon is rarely seen in the coastal plain, inhabiting instead the foothills and mountains up to 5,000 feet, but being more numerous below 3,000 feet. It is not common as a rule, but on November 3, 1913, on the road from La Tigrera to Minca, the writer found a flock of not less than a hundred birds, which had gone to roost in the scrub on the hillside, at about 1,500 feet altitude.

121. *Chloroenas rufina pallidicrissa* (Chubb).

Columba rufina (not of Temminck) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (Bonda).—CARRIKER, Ann. Carnegie Mus., VI, 1910, 393 ("Santa Marta"; crit.).

Chloroenas rufina pallidicrissa RIDGWAY, Bull. U. S. Nat. Mus., VII, 1916, 305 (Dibulla, Fundación, Gaira, Bonda, Punto Caimán, and Mamatoco; meas.; references).

Eight specimens: Bonda, Fundación, Punto Caimán, Mamatoco, Dibulla, and Gaira.

Santa Marta specimens agree with those from Central America in the pallor of the posterior under parts as compared with a single example of true *rufina* from French Guiana. The tail of the latter, however, is by no means sharply bicolor, but possibly a larger series might give a different result.

This is the common pigeon of the lowlands, not going beyond the lower edge of the foothills. It prefers more or less open country with scattering trees. At Valencia, on the south side of the Sierra Nevada, it was found to be fairly common in August, 1920.

122. *Chloroenas albilinea albilinea* Bonaparte.

Columba albilinea SALVADORI, Cat. Birds Brit. Mus., XXI, 1893, 294 ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 172 (Palomina).—BANGS, Proc. New England Zool. Club, I, 1899, 75 (San Sebastian and El Mamón).

Columba albilineata (lapsus) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 129 (Valparaiso).

Additional records: La Concepción (Brown).

Twelve specimens: San Miguel, Cerro de Caracas, Paramo de Mararongo, Taquina, San Lorenzo, Las Vegas, Sierra Nevada de Santa Marta (6,000 feet), and Cincinnati.

Variation in both sexes is excessive, apparently exceeding the difference on which the Central American form, *C. albilinca crissalis*, is based. Thus, two males are deep purplish vinaceous below, with the under tail-coverts strongly washed with the same color, while other specimens are of a decidedly more plumbeous cast, with the under tail-coverts gray. Indeed, these latter birds are not certainly distinguishable from the single adult male *crissalis* with which they have been compared. Females vary in the same way, but average darker than four female *crissalis*.

This fine pigeon ranges in this region through the Subtropical and for a distance into the Temperate Zone, or from 5,000 up to 10,000 feet, wherever forest or scrubby woodland is found. It is fairly common at all such points in its habitat, but is very shy and must be shot at long range as a rule. A nest was found on the San Lorenzo, at about 7,500 feet altitude. It was a frail, flat structure, placed in a small tree about ten feet from the ground, and contained two creamy white eggs.

Family PSITTACIDÆ. PARROTS.

123. ***Amazona ochrocephala panamensis*** (Cabanis).

Amazona ochrocephala panamensis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 249 (Fundación).

Five specimens: Fundación.

Easily distinguished from *A. o. ochrocephala* by its smaller size and paler yellow crown, with the forehead also yellow, not green. One specimen shows numerous parti-colored dull red and yellow feathers on the throat.

The local range of this parrot is almost the same as that of *A. amazonica amazonica*, than which, however, it is less common. It has been detected also in the Rio Cesar Valley at Valencia, and even as far east as Fonseca, along the river.

124. ***Amazona mercenaria*** (Tschudi).

Amazona mercenaria BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 92 (Paramo de Chiruqua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 132 (Bangs' reference).

Eleven specimens: Cerro de Caracas and Paramo de Mamarongo.

Judging from Tschudi's description and plate, these may belong to a separable form, for which the name *canipalliata* of Cabanis would be

available. The Peruvian bird is described as having the feathers of the lower parts showing a good deal of yellow, which is not true of the present series, although several of them have scattering red feathers on the crown, throat, and upper breast. The red at the base of the outer secondaries is mostly concealed. (Compare Sclater's remarks in the *Ibis*, 1881, 412.)

The range of this parrot extends from the upper part of the Subtropical well through the Temperate Zone. Mr. Brown secured two specimens from the Paramo de Chiruqua, at an altitude of 11,000 feet, and the writer found it common in the same general region, wherever woodland remained above 8,000 feet, and thence up to the lower edge of the paramos, say 11,000 feet. It is a very shy bird, however, and hard to secure except early in the morning. Several nights were passed at 9,000 feet on the Cerro de Caracas, at the edge of the forest where the birds roosted, in the effort to obtain them, so that a good series of specimens was eventually secured without much trouble. The species has lately been discovered on the San Lorenzo also, a flock of about twelve birds having repeatedly been observed by the writer frequenting the highest peak (9,300 feet), in November, 1920. They were seen and heard late in the evening and at dawn, indicating that this was their permanent home.

125. *Amazona amazonica amazonica* (Linnæus).

Chrysotis amazonica SALVIN and GODMAN, *Ibis*, 1880, 176 (Arihueca).—SALVADORI, *Cat. Birds Brit. Mus.*, XX, 1891, 283 (Arihueca).

Amazona amazonica ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 132 (Salvin and Godman's reference).

Seven specimens: Fundación, Trojas de Cataca, and Tucurínca.

The Colombian skins agree with those from French Guiana in our collection. Both series show considerable variation, affecting the extent and intensity of the orange color on the tail and wings, and the yellow and blue areas on the head.

A common parrot in the Tropical Zone lowlands around the Ciénaga Grande, back to the edge of the foothills, but not yet recorded from the plains south of the Sierra Nevada.

126. *Pionus sordidus saturatus* Todd.

Pionus sordidus (not *Psittacus sordidus* Linnæus) BANGS, *Proc. Biol. Soc. Washington*, XII, 1898, 133 ("Santa Marta"; crit.), 172 (San Miguel).—

- BANGS, Auk, XVI, 1899, 137, in text ("Santa Marta Mountains"; range).
 —BANGS, Proc. New England Zoöl. Club, I, 1899, 75 (San Sebastian).—
 ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 132 (Valparaiso).
Pionus sordidus saturatus TODD, Proc. Biol. Soc. Washington, XXVIII, 1915,
 81 (Cincinnati; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR
 MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 88 (ref. orig. descr.).
 —RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 503 (ref. orig. descr.).
 —CORY, Field Mus. Zoöl. Series, XIII, 1918, 92 (ref. orig. descr.; range).

Additional records: La Concepción, Chirua (Brown).

Eight specimens: Cincinnati, Minca, Pueblo Viejo, Las Vegas, Sierra Nevada de Santa Marta (8,000 feet), and Heights of Chirua.

Psittacus sordidus of Linnæus (*Systema Naturæ*, Ed. 10, I, 1758, 99) was based on the "Dusky Parrot" of Edwards (*Natural History of Birds*, IV, 1751, 167, pl. 167), the habitat of which was incorrectly given as "Mexico." Its true habitat, however, was presently discovered to be Venezuela, beyond the limits of which country it was apparently unknown until brought to light in the Santa Marta region of Colombia through the activities of Messrs. Brown and Smith. It would appear to be a rare bird, only nine specimens in all having been taken by these collectors, while Count Salvadori had before him but three skins when he wrote Volume XX of the *Catalogue of the Birds in the British Museum*. Only one of these was an authentic specimen, the exact origin of which was known: this was specimen "c," evidently the example which he says "has been kept distinct by Mr. Sclater on account of 'the whole back, nape, and wing-coverts being of a sordid yellowish olive-colour, with the edgings of the feathers lighter'; but it appears to me to have the plumage faded and worn out." However, the single Venezuelan skin before us (No. 35,080, La Cumbre de Valencia, October 10, 1910), in fresh plumage, corresponds very well with this description, while the under parts are buffy olive, each feather subterminally pinkish vinaceous, this color being very prominent on the breast, next the blue area—a character which is barely indicated in two of the Colombian skins. That the peculiarities of this particular specimen are due to immaturity it is difficult to believe.* On the other hand, Count Salvadori's description, based on a specimen in the Massena Collection, corresponds very closely with the Colombian examples before us, which differ from the Venezuelan bird in their much darker, greener coloration, both above and below, the feathers of the upper parts being without conspicuous paler olive brown

or olive grayish edgings, and the under surface also much darker and more uniform green, with little or no brownish or vinaceous tinge. Messrs. Brabourne and Chubb (*Birds of South America*, I, 1912, 91) have suggested that Venezuela be considered the type-locality of *P. sordidus*; if this be accepted, a new subspecific appellation is required for the Santa Marta bird, which is readily separable by the characters already pointed out, which hold good in the series examined. Females are rather duller and paler than males.

Apparently this parrot is essentially Subtropical in its faunal affinities. It ranges over the whole of this region between 2,000 and 6,000 feet, but is not commonly seen below 4,000 feet on the San Lorenzo, although regularly present as low as 2,500 feet in the Sierra Nevada.

127. *Pionus menstruus* (Linnaeus).

Pionus menstruus SCLATER, Proc. Zool. Soc. London, 1857, 19 ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 132 (Bonda).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 210 (Gaira, Don Diego, Santa Marta, Bonda, and Mamatoco, in range; meas.; references).

Seven specimens: Bonda, Mamatoco, Don Diego, and Gaira.

Santa Marta specimens of this species average smaller than three skins from the Caura region of Venezuela, besides being noticeably paler and duller, both above and below, the blue not being nearly so intense. As, however, both Mr. Ridgway (*l.c.*) and Mr. Hellmayr (*Proceedings Zoölogical Society of London*, 1911, 1202), who have examined a much larger amount of material from various sections, are of the opinion that these differences are without geographical significance, we follow them in this case. Some Panama skins examined are also very richly colored, with red throats, while others are pale, with little red.

A Tropical Zone species, fairly abundant in the lowlands all around the Sierra Nevada, at least from Dibulla to Fundación, but perhaps most common at the edge of the foothills back of Santa Marta, around Mamatoco and Bonda. It was recorded from this region many years ago on the strength of a specimen received by Sclater through Verreaux, and both Mr. Brown and Mr. Smith secured a few additional specimens. It proved to be a common species at Valencia, in the Rio Cesar Valley, in August, 1920, and was detected also at Arroya de Arenas, on the edge of the Goajira country.

***Pyrilia pyrilia* (Bonaparte).**

Psittacula pyrilia BONAPARTE, Compt. Rend., XXXVII, 1853, 807, footnote ("Rio Hacha"; orig. descr.; type in coll. Paris Mus.).

Caica pyrilia SCLATER and SALVIN, Ibis, 1871, 381, footnote ("Rio Hacha").

This parrot was described by Bonaparte from a specimen said to have been collected at Rio Hacha by Fontainier. Mr. Carriker failed to meet with it either here or elsewhere in the Santa Marta region, and from the circumstance that the species is known to affect humid rather than arid conditions it is probable that if it occurs anywhere in this region it would be in the vicinity of Fundación.

128. *Psittacula passerina cyanophanes* Todd.

Psittacula cyanoptera (not *Psittacus cyanopterus* Boddaert ?) SALVIN and GODMAN, Ibis, 1880, 176 (Valle de Upar and Valencia).

Psittacula guianensis (not *Agapornis guianensis* Swainson) RIDGWAY, Proc. U. S. Nat. Mus., X, 1888, 543 ("Santa Marta"; crit.).—SALVADORI, Cat. Birds Brit. Mus., XX, 1891, 251 (Valle de Upar and Valencia).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 132 (Salvin and Godman's reference).

Psittacula guianensis viridissima (not of Lafresnaye) HELLMAYR, Nov. Zoöl., XIV, 1907, 88 (Valencia and Valle de Upar; crit.).

Psittacula passerina cyanophanes TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 81 (Rio Hacha; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 88 (ref. orig. descr.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 503 (ref. orig. descr.).—CORY, Field Mus. Zoöl. Series, XIII, 1918, 77 (ref. orig. descr.; range).

Psittacula spengeli (not of Hartlaub) RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 194, part (Valle de Upar and Valencia, in range).

Fifteen specimens: Rio Hacha.

Mr. Ridgway was the first to remark the peculiarities of Santa Marta specimens of what was then called *Psittacula guianensis*, and both Count Salvadori and Mr. Hellmayr have referred to the same circumstance. The adult male of this newly described form, of which several fine specimens are before us, differs from a series of the same sex of *P. passerina viridissima* from Venezuela (including two from close to the type-locality) in the following respects: there is much more hyacinth blue on the primary and secondary coverts, forming a conspicuous patch in the closed wing, while this color is more extended on the under wing-coverts also. In *viridissima* the hyacinth blue of the upper coverts is mostly concealed, being confined to the inner webs of the feathers, while on the under surface of the wing it seldom spreads beyond the secondary coverts. Females of the two forms are quite indistinguishable, however.

The range of this form is confined to the arid Tropical Zone of the northeast part of the Santa Marta region, extending around to the low country south of the mountains, where Simons secured a few specimens. It was very common around Rio Hacha, both in the open woodland and in the thorny scrub and cacti, occurring always in pairs or flocks, and was noted also at Fonseca and Badillo on the occasion of the writer's visit to these points in July, 1920.

129. *Psittacula spengeli* Hartlaub.

Psittacula cyanoptera (not *Psittacus cyanopterus* Boddaert?) WYATT, Ibis, 1871, 382 (Cienaga).

Psittacula spengeli RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 194, part (Cienaga and Fundación, in range; Wyatt's reference).

Eight specimens: Cienaga and Fundación.

No characters appear to be available for separating the females of this species from those of *P. passerina cyanophanes* except the slightly smaller size. The males from Fundación have somewhat less blue on the wings than the Cienaga specimen; the blue of the rump is not so intense, and the general coloration is lighter, more yellowish green. They agree with a series from Calamar and Cartagena.

The local range of this exquisite little parrot is the complement of that of *P. passerina cyanophanes*. Both belong to the littoral Tropical Zone, but the present form occupies the region to the west and southwest of the mountains. The species is characteristic of the Caribbean coastal zone from the Magdalena River eastward, reaching our region only in the neighborhood of the Cienaga Grande. The birds taken at Fundación were all shot in the open woodland and shrubbery.

130. *Brotogeris jugularis jugularis* (Müller).

Brotogerys tovi SALVIN and GODMAN, Ibis, 1880, 176 (Santa Marta).

Brotogeris jugularis SALVADORI, Cat. Birds Brit. Mus., XX, 1891, 259 (Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 132 (Bonda).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 183 (Santa Marta localities and references; meas.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 261 (Bonda suggested as type-locality).

Fifteen specimens: Bonda, La Tigrera, Santa Marta, Mamatoco, Dibulla, and Fundación.

These agree with Costa Rican specimens in having the orange chin-spot well developed, and the posterior under parts with a more or less

decided bluish cast, differing thus from the Venezuelan form, *B. jugularis exsul* (described by the writer in the *Proceedings of the Biological Society of Washington*, XXX, 1917, 129), in which the whole under surface is green without any bluish tinge whatever, the chin-spot is small and pale, and the back and wings are more deeply and extensively washed with brown. Bonda has been suggested as the type-locality for typical *jugularis* in lieu of the deficiency in the original description.

This parrot is a very common bird throughout the whole of the lowlands in the Tropical Zone, but is rarely if ever seen above 1,000 feet. It prefers the open woodland and cultivated districts, and is very destructive to all fruit, especially mangoes.

131. *Pyrrhura viridicata* Todd. (Plate III).

Pyrrhura viridicata Todd, Proc. Biol. Soc. Washington, XXVI, 1913, 174 (San Lorenzo; orig. descr.; type in coll. Carnegie Mus.).—CORY, Field Mus. Zool. Series, XIII, 1918, 68 (ref. orig. descr.; range).

Two specimens: San Lorenzo.

Description.—Above, including wing-coverts and outer webs of secondaries, bright green (between Scheele's green and grass green), duller on the crown and nape, and brighter (Calliste green) on the forehead; narrow frontlet scarlet; auricular patch dull madder brown; sides of head and neck, together with entire under surface, bright green, with scattering scarlet and orange feathers on the lower breast; feathers of the throat and abdomen more or less tinged with dull madder brown basally; primaries externally sailor blue, with narrow outer margins of Capri blue, their inner webs and tips dusky, and the outermost primary entirely dusky; secondaries progressively more greenish, with dusky tips; primary-coverts Capri blue; lesser under wing-coverts and edge of wing mottled flame scarlet and orange chrome; greater under wing-coverts and inner webs of primaries underneath dull olive brownish; tail parrot green above, most of the feathers more or less tinged (especially on the inner webs) with dull maroon or coppery, and chestnut or bay below; "iris brown; feet dull black, soles yellow; bill ivory white, tinged with olive." Wing (male, type) 143; tail, 116; bill, 19; tarsus, 12. Female (No. 42,534): wing, 138; tail, 121; bill (broken); tarsus, 12.

The female example is rather brighter than the type, the plumage



Pyrrhura viridicata Todd, ♀
(Four-fifths natural size)

being less worn; the lower tibial feathers are pinkish; some of the scapulars are orange scarlet; and there are rather more reddish feathers on the under surface. These scattering feathers are undoubtedly merely an individual character, as in numerous other species of this family.

The discovery of a new and very distinct species of *Pyrrhura* in the Santa Marta region, to which so far as known it is confined, is of more than passing interest. Apparently it has no very near relatives, although it approaches, or rather resembles, several other species in different respects. In the brilliancy of the under wing-coverts it is like *P. egregia* of British Guiana, but there is no trace of barring on the under surface—not as much even as in *P. hoffmanni*, from which it differs conspicuously in its plain pileum, darker auricular patch, differently colored wing-coverts, etc. From *P. hamatotis* and *P. rhodoccephala* it is still more different.

The male was shot July 27, 1911, the female July 19, 1913, both being secured on the Cerro Quemado peak of the San Lorenzo Mountain, between 7,000 and 8,000 feet, in the Subtropical Zone. Others were seen here also, but always on the wing, and no more could be secured. It was seen also in the forest on the mountainside, east of Taquina, at the foot of the Paramo de Mamarongo, but always flying out of gunshot. No doubt it is confined to the Santa Marta region.

Since the above was written the junior author has succeeded in obtaining a third specimen, a female, on the crest of the San Lorenzo, in November, 1920. A flock of perhaps sixteen birds were present here, but all very wild.

132. *Eupsittula pertinax æruginosa* (Linnæus).

Conurus æruginosus WYATT, Ibis, 1871, 381 (Cienaga).—SCLATER, Proc. Zool. Soc. London, 1871, 493 (Cienaga; crit.).

Aratinga æruginosa occidentalis TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 81 (Rio Hacha; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 88 (ref. orig. descr.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 258, note (crit.).

Eupsittula pertinax occidentalis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 503 (ref. orig. descr.; crit.).

Aratinga æruginosa æruginosa CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 257 ("Santa Marta"; crit.).

Eighteen specimens: Rio Hacha and Dibulla.



These specimens, when compared with a series of twelve skins from the Orinoco region of Venezuela, differ as follows: the blue color of the pileum is more pronounced; the frontal region, bordering the base of the upper mandible, is dusky brownish, never white; the orbital ring is paler, with scarcely any (sometimes no) yellow tinge; and the wings externally are more bluish, less greenish. They clearly represent a form subspecifically distinct from the Orinoco birds, and were accordingly described as new in the belief that Messrs. von Berlepsch and Hartert (*Novitates Zoologicae*, IX, 1902, 107) were justified in designating Cumaná, Venezuela, as the type-locality for *Psittacus aruginosus* Linnæus.³⁰ A series from northern Venezuela (States of Carabobo and Lara), while showing a tendency toward the characters of the Colombian birds, are easily referable to the Orinoco form, from which it was inferred that specimens from Cumaná would also be the same. Now Dr. Chapman comes forward with good evidence to show that Messrs. von Berlepsch and Hartert were *not* justified in their designation of a type-locality for *Psittacus aruginosus*. This name was based on Edwards' "Brown-throated Parakeet," said (in error) to have come from the "West Indies," the description and figure of which clearly indicate a bird without any yellow on the orbital region, so that it is obvious, as Dr. Chapman claims, that the name *aruginosa* ought to be used for the Colombian form now under consideration.

Although *Eupsittula pertinax xanthogenia* of the island of Bonaire,

³⁰ Messrs. Brabourne and Chubb (*Birds of South America*, I, 1912, 82) have ignored the first fixing of the type-locality in this case, as in numerous others, substituting Cayenne instead. There is no rule in nomenclature governing procedure in such cases, but to leave every author free to follow his own ideas and predilections in these matters, without reference to the work of his predecessors or regard for any fixed principles of procedure, is bound to result in more or less confusion whenever it becomes necessary, as in the present case, to subdivide certain species which were described from an unknown or mistaken source. The fixing of a type-locality is as important for each species and subspecies as the fixing of a type-species for each genus, and ought to be governed by formulated rules. (Compare, in this connection, my remarks upon the case of *Chamepelia passerina*, ANNALS CARNEGIE MUSEUM, VIII, 1913, 533). My opinion is that, all other things being equal, priority should govern in such cases. For instance, had Dr. Chapman not shown the true application of the name *aruginosa*, it would make considerable difference which authority was accepted as to the type-locality, since the birds from Cumaná are recognizably distinct from those from Cayenne!—W. E. C. T.

Dutch West Indies, is certainly a very different looking bird from the present form, the two are connected by an unbroken chain of intermediate, intergrading forms, and are therefore provisionally regarded as conspecies. The inter-relationships of the various races of this group present some interesting questions, and will be discussed on another occasion.

This paroquet is a common resident in the littoral Tropical Zone from Dibulla eastward into the Goajira Peninsula. It is more abundant at Rio Hacha than at Dibulla, evidently preferring the more arid region. Wyatt speaks of having shot it also in the cactus thickets near Cienaga, south of Santa Marta, and it has been obtained at the same locality in 1913 by the University of Michigan party. On the opposite side of the Sierra Nevada, on the edge of the Goajira country, there are recent records of observation for Arroya de Arenas, Fonseca, and south even to the savannas of Valencia.

133. *Aratinga wagleri* (Gray).

Conurus wagleri SALVIN and GODMAN, Ibis, 1879, 206 (Ataquez).—SALVADORI, Cat. Birds Brit. Mus., XX, 1891, 184 (Ataquez).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 172 (Palomina and San Miguel).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 132 (Valparaiso).

Additional records: La Concepción, Chirua, San Antonio (Brown).

Two specimens: Las Taguas and Las Vegas.

One of these has the lower part of the tibiae tinged with red, while in the other they are wholly green. The same variation occurs in Venezuelan examples of this species, which are otherwise precisely like the above.

On the north and west slopes of the San Lorenzo this paroquet is found only as a rare straggler. It was not rare, however, in the vicinity of Las Vegas, on the east slope, feeding in the valley below and roosting on the mountainside above the hacienda. One was taken also at Las Taguas, on the south slope of the mountain. In the Sierra Nevada Mr. Brown took a series of specimens from various points on the north slope, while Simons found it at Ataquez on the south slope. The writer saw the bird several times between San Miguel and Macotama, and shot one from a flock flying over the valley, but it fell into the gorge below and could not be found. All of the locality records for the present species in this region lie in the upper part of the Tropical or else in the Subtropical Zone.

134. *Thectocercus hæmorrhous neoxenus* (Cory).

One specimen: Rio Hacha.

This is a species of the Arid Tropical Zone of Venezuela, which finds its western limit in the Goajira region. The single specimen agrees well with a small series from western Venezuela, which we refer provisionally to the form described a few years ago by Mr. Cory from Margarita Island. The junior author found it fairly common at Rio Hacha and Arroya de Arenas in July, 1920.

135. *Ara militaris* (Linnæus).

Ara militaris BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 133 (Bonda; Salvin and Godman's and Bangs' references).

Four specimens: Bonda and Las Nubes.

Mexican specimens average a little larger, it is true, but we cannot see our way clear to recognizing them as subspecifically distinct on that ground alone.

This is the most common species of macaw in the vicinity of Santa Marta itself, ranging from sea-level up to the lower edge of the Subtropical Zone, to 5,000 feet at least.

136. *Ara chloroptera* Gray.

Ara chloroptera SALVIN and GODMAN, Ibis, 1880, 176 (Valle de Upar).—SALVADORI, Cat. Birds Brit. Mus., XX, 1891, 156 (Valle de Upar).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 133 (Salvin and Godman's and Bangs' references).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 125 ("Santa Marta," Dibulla, Fundación, and Valle de Upar, in range; meas.; references).

Five specimens: Fundación and Dibulla.

This is the common species of macaw in the lowlands and lower foothills of the region between Santa Marta and Rio Hacha, and is also found, although less commonly, in the forested country about Fundación. Simons secured it on the south side of the Sierra Nevada, at Valle de Upar, while the writer has observed it at Valencia, in the same general region, as well as at Arroya de Arenas, farther north.

137. *Ara ararauna* (Linnæus).

Ara militaris (not *Psittacus militaris* Linnæus) SALVIN and GODMAN, Ibis, 1880, 176 (Arihueca).

Ara ararauna SALVADORI, Cat. Birds Brit. Mus., XX, 1891, 152 (Arihueca).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 122 ("Trojas de Cataca" [i.e., Tierra Nueva], Fundación, and Arihueca, in range).

Five specimens: Tierra Nueva, Fundación, and Tucurínca.

Agreeing in all respects with specimens from Bolivia, the species being remarkably uniform throughout its extensive range. It is a common bird in the lowland forest region of the Tropical Zone between the Sierra Nevada on the one side and the Cienaga Grande and Magdalena River on the other, where it is more numerous than *A. chloroptera*. It was noted also at Valencia, in the Rio Cesar Valley, in August, 1920.

Family CUCULIDÆ. CUCKOOS.

138. *Crotophaga ani* Linnaeus.

Crotophaga ani BANGS, Proc. Biol. Soc. Washington, XII, 1898, 172 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 134 (Bangs' reference).

Additional records: La Concepción, San Antonio (Brown); Fundación (Univ. Mich. Exp.).

A wide-ranging species in the West Indies and tropical South America, for which there are a few records from the Santa Marta region, referring to examples taken at Palomina, San Antonio, and La Concepción, in the Sierra Nevada, by Mr. Brown, and at Fundación by the University of Michigan party.

139. *Crotophaga sulcirostris sulcirostris* Swainson.

Crotophaga sulcirostris SALVIN and GODMAN, Ibis, 1880, 175 (Santa Marta; habits).—SHELLEY, Cat. Birds Brit. Mus., XIX, 1891, 432 (Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 144 (Santa Marta and Bonda).—BANGS and PENARD, Bull. Mus. Comp. Zool., LXIV, 1921, 365 ("Santa Marta").

Additional records: Mamatoco (Univ. Mich. Exp.); La Tigrera (Carriker).

Four specimens: Bonda and Santa Marta.

These specimens are at the extreme of small size for this species, but this appears to be a character which cannot be correlated with locality, as shown by the table of measurements given by Mr. Ridgway (*Bulletin U. S. National Museum*, No. 50, VII, 1916, 94).

The Groove-billed Ani is one of the most common and widely distributed species with which the writer is acquainted. It is found throughout the lowlands and foothills of Central America, Colombia, and Venezuela, everywhere in open country, either natural or cleared. It is always seen in pastures with the cattle, feeding on the large wood-ticks which infest them when living in the hot lowlands. The nest is built in some thick thorny tree, several females using it at once. A curious and degenerate species of cuckoo. Simons says that it is "known here as 'Lucia,' also 'Gallinazito,' from its scavenger-like habits. Very common all along the sea-shore, congregating in troops and making a great noise. On alighting they always wag their tail three times."

140. *Crotophaga major* Gmelin.

Twenty-five specimens: Mamatoco, Fundación, Trojas de Cataca, Dibulla, and Tucurínca.

In two young birds (Fundación, August 10) the glossy edgings of the feathers are less developed, especially on the head and under parts; the ridge of the culmen is much less prominent.

According to the experience of the writer this species is found only near sea-level, along the banks of the larger rivers or lagoons. It is an abundant bird around the marshes at Fundación, as well as along all the larger streams between the railroad and the Ciénaga Grande, staying in or near the vegetation over the water. Like *C. sulcirostris*, it always goes in flocks, but unlike its relative it is a very shy bird as a rule, and hard to approach closely. The call-note, too, is quite different from that of the other species.

141. *Tapera nævia nævia* (Linnæus).

Two specimens: Fundación.

At first glance Colombian specimens appear to differ from topotypical Cayenne birds in their generally lighter, more buffy upper parts, but when care is taken to compare only those specimens which are in the same state of plumage the differences tend to disappear. A series from Bolivia is rather grayer above, but it is by no means clear that they represent a recognizable form. At the northern limit of the range of the species the maximum of size is reached, and this large form is recognized by Mr. Ridgway under the subspecific designation of *excellens*. Seasonal and age variation plays so large a part in any

attempt to work out the possible geographic variants of this species in the South American continent that we prefer to leave the matter in abeyance.

This is not a common bird anywhere, and moreover is most difficult to secure. It has been heard in nearly all the localities visited in the lowlands where more open conditions exist. It prefers the thick second-growth, abandoned pasture-lands, etc. It has a very characteristic whistling call of two musical notes, but of such ventriloquistic properties that it is next to impossible to locate the bird by following it up.

142. *Piaya columbiana* (Cabanis).

Piaya cayana (not *Cuculus cayanus* Linnæus) SALVIN and GODMAN, Ibis, 1879, 206 (Valle de Upar); 1880, 175 (Minca).—SHELLEY, Cat. Birds Brit. Mus., XIX, 1891, 373 ("Santa Marta," Minca, and Valle de Upar).

Piaya cayana mehleri (not of Bonaparte) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta").—BANGS, Proc. New England Zool. Club, I, 1899, 76 (San Sebastian).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 134 (Bonda).

Piaya cayana columbiana STONE, Proc. Acad. Nat. Sci. Philadelphia, 1908, 498 ("Santa Marta" and Bonda).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 319 (Santa Marta [region]; crit.).

Piaya columbiana RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 47 (diag.; Bangs' reference).

Additional records: La Concepción, San Francisco (Brown).

Twenty-one specimens: Bonda, Cincinnati, Fundación, La Tigrera, Mamatoco, Las Vegas, Minca, and Don Diego.

We follow Mr. Ridgway in keeping this form specifically distinct from *P. cayana*, although intergradation between the two has been assumed or asserted to exist by some other authorities. Certain it is that there is a great deal of variation shown in the amount of subterminal black on the rectrices, this color being highly developed in some specimens, covering practically the whole of the exposed portions of the outer feathers in some individuals, while in others it is not as wide as the black tips. The general coloration, too, varies with the season, July and August birds, for example, being very pale when compared with those taken in January, and this fact must naturally be borne in mind in making comparisons. No. 42,989 (Fundación, August 17) is peculiar in having the central rectrices uniform chestnut, without any sign of a differently colored tip.

A widespread and fairly common species in the Tropical Zone, found from sea-level up to 5,000 feet on the slopes of the San Lorenzo, but not (if we except Mr. Brown's record for San Sebastián) going above 3,000 feet in the Sierra Nevada, where moreover it is very rare. It is partial to open woodland, scattered trees, and cultivated land in general. Once a bird of this species was seen with a large "walking-stick" in its mouth, a circumstance which out of curiosity led to the habit of examining the stomachs of all killed since that time, to find that their food consists almost exclusively of these insects, especially the larger kinds.

A set of three eggs sent in by Mr. Smith from Bonda, July 10, are of the usual rough texture of shell for this family, and dull white in color. In shape they are rather elongate oval, like those of the Yellow-billed Cuckoo (*Coccyzus americanus*), measuring 37×24 , 35×25 , and 33×24 . The nest is a frail platform of coarse twigs, without special lining, placed in the fork of an oblique branch of a *Banisteria laurifolia*, and so thin that it would easily be possible to count the eggs from below.

143. *Coccyzua rutila gracilis* (Heine).

One specimen: Trojas de Cataca.

The single specimen is worn and faded, but is apparently referable to this form, the range of which extends through western Colombia into Ecuador.

A single male was taken at Trojas de Cataca, October 6, 1913, no others being seen. It was shot in low, tangled woodland among the masses of vines so common in such places. Probably it occurs throughout the alluvial plain surrounding the Cienaga Grande.

144. *Coccyzus lansbergi* Bonaparte.

Coccyzus lansbergi SCLATER, Proc. Zool. Soc. London, 1864, 122 ("Santa Marta"); 1870, 169 ("Santa Marta"; diag.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 134 (Cienaga).

Coccyzus lansbergi SHELLEY, Cat. Birds Brit. Mus., XIX, 1891, 303 ("Santa Marta").—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 41 ("Santa Marta" and Cienaga, in range; references).

One specimen: Tucurínca.

Very few specimens of this rare cuckoo appear to be on record, so that the present fine example is of exceptional interest and value. It

agrees with two other specimens from the north coast of Colombia, whence Bonaparte's type probably came, instead of from the Bogotá region. It appears to be a species of the littoral Tropical Zone, ranging from Venezuela to Ecuador. It was recorded from this region many years ago by Sclater, on the strength of a Santa Marta specimen in the British Museum received from Verreaux. The specimen above recorded was shot September 22, 1915, in the dense matted jungle lying below the railroad at Tucurínca, toward the Ciénaga Grande.

145. *Coccyzus melacoryphus* Vieillot.

Coccyzus melancoryphus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 134 (Bonda).

Coccyzus melacoryphus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 35 (Bonda; Allen's reference).

The only record is that above quoted, pertaining to a single specimen received from Mr. Smith, collected at Bonda, August 1, 1898, and agreeing with examples from Argentina.

146. *Coccyzus americanus* (Linnæus).

Coccyzus americanus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 134 (Bonda).—ALLEN, Auk, XVII, 1900, 364 (Bonda).

Coccyzus americanus americanus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VII, 1916, 12 (Bonda, in range).

Seven specimens: Bonda, Punto Caiman, and Fundación.

We can see no sufficient reason for subdividing this species, the difference in size between eastern and western birds being surely too slight and too inconstant for recognition in nomenclature. Both extremes occur in our South American series.

The Yellow-billed Cuckoo is evidently a regular winter visitor on the north coast and the lowlands around the Ciénaga Grande, inhabiting the more open woodland. The specimens on record were all secured between October 1 and November 21.

Family BUBONIDÆ. OWLS.

147. *Glaucidium brasilianum medianum* Todd.

Glaucidium ferox (not *Strix ferox* Vieillot) SHARPE, Ibis, 1875, 51, 52, 57 ("Santa Marta"; meas.; crit.).—SHARPE, Cat. Birds Brit. Mus., II, 1875, 200 ("Santa Marta"; descr.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 132 (Bonda).

Glaucidium brasilianum [subsp.] RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 801, footnote (Bonda; meas.).

Glaucidium brasilianum medianum TODD, Proc. Biol. Soc. Washington, XXIX, 1916, 98 (Bonda; orig. descr.; type in coll. Carnegie Mus.).—CORY, Field Mus. Zoöl. Series, XIII, 1918, 46 (ref. orig. descr.; range).

Glaucidium brasilianum phalaenoides (not *Strix phalaenoides* Daudin) CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 255 (Bonda; crit.).

Seventeen specimens: Bonda, La Tigrera, Santa Marta, Mamatoco, Fundación, and Gaira.

The series shows a certain amount of variation, paralleling that exhibited by the Central American and Mexican form. No. 8,956, although in the brown phase, has the tail decidedly tinged with rufous. No. 42,630, also in the brown phase, has the pileum plain, except in front. No. 41,964 is as gray above as the average Central American bird, and differs further in having the pileum and back conspicuously spotted with white. No. 41,847, May 1, is a young bird in the rufescent phase, with the tail only about half grown, but coming in wholly rufous, unbarred; the striping on the under surface is less distinct.

Sharpe referred the four Santa Marta specimens of this owl which came under his notice to the Brazilian form, called by him *G. ferox*, but this would seem to be a mistake, judging from the material examined in this connection. *G. brasilianum brasilianum*, as this southern form must be called, is characterized by its relatively larger size, richer, browner coloration above, more decidedly punctate pileum, and heavier, more "solid" streaking below in the brown phase. The last-named character may also serve to distinguish it in the rufescent phase also, but with only one specimen in this phase one cannot be sure. Comparison of the present series from the Santa Marta region with another from Trinidad and northern Venezuela on the one hand, and with one from Central America, Mexico, and Texas on the other, shows that they represent a form distinct from either, as already surmised by Mr. Ridgway. In the brown phase the new form differs from *G. brasilianum phalaenoides* by its paler, more buffy brown color above, less heavily streaked under parts, and more decidedly and more regularly barred tail, the bars usually running across the feather, or at least touching the shafts, while in *phalaenoides* they seldom are more than a pair of spots on the outer webs. In the rufescent phase there is apparently no difference in color, but the streaking of the under parts averages less broad in *medianum* than in *phalaenoides*. From *G.*

brasilianum ridgwayi (brown phase) it differs conspicuously in the much browner, less grayish tone of the upper parts, and in the decidedly more rufescent, less grayish color of the streaks on the under surface. With only one specimen of *ridgwayi* in the rufescent phase at present available we are unable to give any character for the separation of the respective forms in that phase. In *G. b. medianum* the streaks below are almost as rufescent in one phase as in the other, while in all the other forms of this species (except, apparently, true *brasilianum*) the two phases differ greatly in this respect.

While agreeing with Dr. Chapman in the "belief that there is little or nothing to be gained in proposing forms where geographic variation is so slight, and individual variation so great that subsequent identification, except at type-localities, becomes largely a matter of opinion," we feel that our conclusions in this particular case, supported as they are by an array of well-prepared specimens representing the several forms discussed, are worthy of acceptance.

This little owl is fairly common in the Tropical Zone lowlands from Santa Marta around to Fundación. Apparently it is absent or very rare on the north coast, as none were noted here whatever. It prefers the thorny scrub and tangled undergrowth.

148. *Ciccaba virgata virgata* (Cassin).

Syrnium virgatum BANGS, Proc. Biol. Soc. Washington, XII, 1898, 157 (Pueblo Viejo).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 132 (Bangs' reference).

Ciccaba virgata virgata RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 763 ("San Lorenzo," [i.e., Cincinnati] and Pueblo Viejo; meas.; crit.).

Three specimens: La Tigrera and Cincinnati.

No. 41,815, Cincinnati, April 15, is in the downy stage, the wing- and tail-feathers just coming in. The other two are adults in the dark phase, indistinguishable, so far as we can see, from specimens from Venezuela and Costa Rica.

A young bird in the down was taken at Cincinnati, April 15, 1913. An adult was taken at the same place July 20, 1911, and another in the woodland along the banks of the Tamocal Creek a couple of miles below La Tigrera, May 9, 1913. It seems to be a rare bird, with a range extending through the Tropical Zone.

149. *Pulsatrix perspicillata perspicillata* (Latham).

Syrnium perspicillatum BANGS, Proc. Biol. Soc. Washington, XII, 1898, 132 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 131 (Bonda; plum.).

Five specimens: Bonda and Dibulla.

These agree in all respects with a topotypical example from Cayenne. The species seems to belong to the littoral Tropical Zone, here as elsewhere in Colombia. The Dibulla specimen was taken near sea-level, in the heavy forest.

150. *Otus choliba* subsp.

One specimen: Las Taguas.

This individual is apparently referable to *O. choliba*, judging from the buffy tinge of the under plumage, which is said to be characteristic of this species, but it certainly differs from all of the rest of the series in the collection of the Carnegie Museum. Mr. Waldron De Witt Miller has kindly compared it with the material in the American Museum of Natural History, and reports as follows: "I have compared the skin of *Otus* with all our specimens of the genus, and find nothing very closely resembling it; it differs from all our specimens of *O. choliba* in the finer streaking of the underparts; in this respect it agrees much more closely with our single skin of *O. 'fulvescens'* from Matto Grosso, but the general tone of coloration of your bird is much less fulvescent." Coming as it does from a locality within the Subtropical Zone, it may very well represent a distinct form, but until more specimens have been collected it would be unwise to formally characterize it.

151. *Otus choliba margaritæ* Cory.

Three specimens: Bonda.

An adult female and two young birds, still in juvenal dress, but with wings and tail fully grown, collected at Bonda May 1, 1899, together with a specimen from Calamar, Colombia (near the mouth of the Magdalena River) differ from a series of specimens from Costa Rica and Panama in being paler, more buffy, less rufescent above, and also in being slightly smaller. The adult from Bonda is paler below, with the dark cross-barring less distinct than in the Calamar bird, but obviously belongs to the same form. They agree fairly well with two other specimens from Margarita Island, but not with the type of

margarita, kindly loaned by Mr. Cory. The type is in fact an unusually dark individual, scarcely to be matched in the extensive series accumulated for this investigation. This material indicates that there are really three color-phases in this species, instead of two, as commonly recognized—a gray, a brown, and a rufous. Of these only the brown phase appears to be represented in Central America, but all three occur in our small series from Bolivia. Specimens in the brown phase from Paraguay (the type-locality of *choliba*) are scarcely different from Central American skins, but a series from Guiana, Trinidad, and Venezuela average considerably darker, especially above, and are probably separable under the name *cruciger* Spix, based on the bird of the lower Amazon. The type of *margarita* is a bird in this gray phase, but the name may be accepted to cover the pale littoral race which apparently ranges along the coast and islands of Venezuela into Colombia.

152. ***Rhinoptynx clamator*** (Vieillot).

Rhinoptynx clamator RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 671 (Don Amo; meas.).

One specimen: Don Amo.

A female in the Smith Collection, shot at Don Amo May 7, 1899, is the only record for this rather rare but widely distributed owl in this region. The specimen compares favorably with other specimens from Costa Rica, Bolivia, and central Colombia.

Family STEATORNITHIDÆ. GUACHAROS.

153. ***Steatornis caripensis caripensis*** Humboldt.

Steatornis caripensis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 137 (Bonda).

The only published record of the Guacharo for this region is that just quoted, which refers to a single bird sent in by Mr. Smith, and labelled Bonda, September. A pair were seen by the junior author on the road near Cincinnati, at close range on a moonlight night, in November, 1912. They were readily recognized also by the characteristic call-note, with which he became familiar while in Trinidad.

Family CAPRIMULGIDÆ. GOATSUCKERS.

154. *Chordeiles acutipennis acutipennis* (Hermann).

Two specimens: Rio Hacha.

A species which has a wide distribution in tropical South America, and has been taken twice in our region, a single example having been secured by Mr. F. M. Gaige, of the University of Michigan Expedition, at Cienaga on August 22, 1913, and two young birds by the writer at Rio Hacha on July 16, 1920.

155. *Nyctidromus albicollis gilvus* Bangs.

Nyctidromus albicollis (not *Caprimulgus albicollis* Gmelin) SALVIN and GODMAN, Ibis, 1880, 174 (Arihueca; habits).—HARTERT, Cat. Birds Brit. Mus., XVI, 1892, 587 (Arihueca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 137 (Santa Marta and Bonda).

Nyctidromus albicollis gilvus BANGS, Proc. New England Zool. Club, III, 1902, 82 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.).—DUBOIS, Syn. Avium, II, 1903, 1065 (ref. orig. descr.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 277 (ref. orig. descr.; syn.), 281 (Bonda and Don Diego; descr. nest and eggs).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 274, in text ("Santa Marta"; crit.).—CORY, Field Mus. Zool. Series, XIII, 1918, 127 (ref. orig. descr.; range).

Nyctidromus gilvus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 100 (ref. orig. descr.; range).

Nyctidromus albicollis albicollis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 537 (Santa Marta [region]; meas.; references).

Twenty-five specimens: Bonda, Buritaca, Agua Dulce, Fundación, Don Diego, Mamatoco, and Dibulla.

For a long time we were not disposed to accord recognition to this race, believing that it was not different from true *albicollis*, but the receipt of a magnificent series of thirty-five specimens of the latter from the type-locality (French Guiana) has necessitated a revision of former conclusions. We now find that the separation of the Santa Marta bird can be maintained on the general grounds indicated by Mr. Bangs. It is true that there is very little if any difference between the two forms in the color of the upper parts in either phase of plumage, but the lower surface appears lighter colored, more buffy, less rufescent, and the barring is narrower, and obsolescent posteriorly. The differences (as in many other species of this family) are difficult to express exactly, but are sufficiently obvious upon actual comparison of

a series, despite the fact that occasional specimens are hard to place considered alone. Individual variation is considerable in this species, and due allowance must be made therefor in making comparisons.

The Central American bird, as represented in our collection by a series from Costa Rica, obviously cannot be referred to true *albicollis*, although resembling the latter in its relatively heavily barred under parts, by which token it differs also from *gilvus*. In the rufous phase it seems to be merely a little paler above than *albicollis* or *gilvus*, but in the gray phase it is decidedly different from both, being more rufescent, less grayish above, while the black streaks on the middle of the pileum and back are wider, and the under parts average less rufescent. It would be unwise to name this form, however, until the status of certain of the Mexican races lately described can be reinvestigated.

The present race appears not to be strictly confined to the Santa Marta region, but to extend along the coast to the westward, as far as the Rio Sinu at least, and up the Magdalena Valley for an unknown distance. Specimens from the interior of Colombia, referred to typical *albicollis* by Dr. Chapman in the absence of material for comparison, certainly do not belong to that form, judging by the few specimens examined in this connection, and probably represent another unnamed race.

A common bird over the whole of the littoral Tropical Zone, except in the heavy forest itself. It frequents thickets, shrubbery, and dense second-growth by day, always roosting on the ground. Its call is not unlike that of the Poor-will. Mr. Smith sent in two sets of eggs, of two each, collected respectively at Bonda on April 15, and at Don Diego on May 15. The latter set was found in a shady place in a coffee-orchard, on alluvial land, near sea-level. "The eggs are oval to elongate-oval, the ground-color vinaceous buff, irregularly blotched and clouded with a darker shade of buff, interspersed with faint shades of lavender. Some of the eggs are much more heavily marked than others, in one there being a few superimposed streaks of pale hazel. In each set one of the eggs is much less strongly colored than the other." There are in the Carnegie Museum series two young birds in juvenal dress, collected at Bonda on June 26 and 27.

156. *Antrostomus rufus rufus* (Boddaert).

Antrostomus rufus BANGS, Proc. New England Zool. Club, I, 1899, 78 (San Sebastian).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 137 (Bangs' reference).

Antrostomus rufus rufus BANGS, Proc. Biol. Soc. Washington, XXIV, 1911, 188 ("Santa Marta Mts."; meas.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 510 (San Sebastian and Matajira, in range; references).

Three specimens: Matajira, Mamatoco, and Valencia.

A very rare species, for which there are only four records for this region. Mr. Brown took one at San Sebastian on July 15, 1899; Mr. Smith sent in a single specimen, collected at Matajira on April 16, 1899; and the writer secured a third in a tract of woodland near Mamatoco, July 31, 1913. The fourth record is based on a bird shot by him near Valencia, in the Rio Cesar Valley, August 7, 1920.

The female collected by Mr. Smith was brooding a set of two eggs, which are now in the Carnegie Museum. They resemble in general those of the Whip-poor-will (*Antrostomus vociferus*), but are more scrawled than spotted with dull lilac, the shell-markings being very conspicuous. Size, 30×23 mm. They were laid on the bare ground, in a thicket in open land.

157. *Setopagis parvula heterura* Todd.

Setopagis heterurus (sic) TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 81 (La Tigrera; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 88 (ref. orig. descr.).—CORY, Field Mus. Zool. Series, XIII, 1918, 135 (ref. orig. descr.; range).

One specimen: La Tigrera.

This bird is obviously so closely related to *S. parvula* (Gould), of which we have six Bolivian skins and the American Museum of Natural History three from Brazil, that it should doubtless be regarded as conspecific. In the color and markings of the upper surface the two forms are entirely similar, but the under parts in the new form are somewhat darker. The tail is broadly tipped with white, the two outer rectrices on each side having white on *both* webs, 15 to 18 mm. wide along the shafts. The next two pairs have only the *inner* webs so tipped, while the middle pair have no white at all. In *S. p. parvula* the white is mostly confined to the inner webs on all the rectrices (except of course the middle pair), and is much less in extent, running only 11 mm. or less along the shafts. The white patch on the wings is also decidedly larger in *heterura* than in *parvula*. Measurements: wing, 138; tail, 90; bill, 11; tarsus, 15.

The type and only specimen (a male) was taken May 6, 1913, about a mile below La Tigrera, where it was flushed from a thicket in the daytime.

158. *Systellura*³¹ *ruficervix* (Sclater).

Stenopsis ruficervix HARTERT, Cat. Birds Brit. Mus., XVI, 1892, 584 (Sierra Nevada de Santa Marta).

Ten specimens: San Miguel, Macotama, Paramo de Chiruqua, and San Lorenzo.

Agreeing with specimens from Venezuela and the interior of Colombia.

This species appears to be more characteristic of the Temperate Zone, although extending down to the upper Subtropical. A pair were secured on the San Lorenzo at 8,000 feet, where they were breeding. The eggs were laid out on an open ridge on the bare ground, under the shelter of a small bush. In the Sierra Nevada it was fairly common from San Miguel on up the valley to an altitude of 12,000 feet, and seven specimens were secured. A pair were breeding near our camp at San Miguel, the eggs being laid on top of a bare rock with high grass all around.

159. *Thermochalcis cayennensis albicauda* (Lawrence).

Nine specimens: Punto Caiman, Don Diego, and Dibulla.

Unfortunately only one male is included, and this looks as if it were not fully mature. In its darker coloration above and buffy suffusion below as compared with an adult male of *T. c. insularis* it answers to Mr. Ridgway's diagnosis of *albicauda*. The outer rectrices are conspicuously banded with black, but in view of the variation shown in this respect by a series of true *cayennensis* from French Guiana we are not inclined to attach much if any importance to this character. Females differ conspicuously from a series of the same sex of the typical form in being more buffy below, with the dark barring and mottling much less distinct; they are also paler above, with the black spots and streaks smaller. They agree well with a female *albicauda* from Costa Rica, but have the black streaks on the pileum less "solid." They are indistinguishable from female examples of *insularis*, however. The preponderance of evidence thus favors the reference of the Santa Marta birds of this genus to *albicauda*, to which form Mr. Ridgway doubtfully refers a specimen from Barranquilla, Colombia.

³¹ The combination "*Thermochalcis ruficervix*" (cf. Chapman, *Bulletin American Museum of Natural History*, XXXVI, 1917, 275) is of course inadmissible, *Systellura* having priority.

An exceedingly rare bird everywhere, except at Dibulla, where it was nearly as common as *Nyctidromus albigollis gilvus*. Six specimens were taken here, nearly all around the cattle corrals, to which they were doubtless attracted by the insects about the animals. Probably it is present at Rio Hacha also, but it was not possible to hunt there at night.

Family MOMOTIDÆ. MOTMOTS.

Urospatha martii semirufa (Sclater).

Momotus semirufus SCLATER, Rev. et Mag. Zoöl., (2), V, 1853, 489 ("Santa Marta"; orig. descr.; type now in coll. —?).—SCLATER, Proc. Zoöl. Soc. London, 1855, 136 (crit.); "1857," 1858, 254 ("Santa Marta").—SCLATER and SALVIN, Proc. Zoöl. Soc. London, 1864, 363 ("Santa Marta," in range).—GIEBEL, Thes. Orn., II, 1875, 611 (ref. orig. descr.; syn.).

Baryphthengus martii (not *Momotus martii* Spix) SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1895, 462 ("Santa Marta"; syn.).

Urospatha semirufa BRABOURNE and CHUBB, Birds S. Am., I, 1912, 96 (ref. orig. descr.; range).

Urospatha martii semirufa RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 468 ("Santa Marta," in range; references).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 267 ("Santa Marta"; crit.).

Of this species Sclater writes as follows: "This fine, large Motmot I first saw in 1853 in the hands of MM. Verreaux, who had then lately received two specimens of it from their collector at S. Martha. . . . I at that time considered the bird as without doubt unnamed, and described it accordingly in Guérin's 'Revue et Magazin de Zoölogie.'" It is now recognized as a northern race of *Urospatha martii*, but it is exceedingly doubtful if the type ever came from Santa Marta. Not one of the collectors who have visited the region from the time of Simons up to the present has detected it, and Dr. Chapman points out that its known range in Colombia is restricted to the humid Tropical Zone west of the Eastern Andes, and very probably the original specimens came from some point in this latter section, or else, like *Tanagra fulvicrissa*, from Panama. The present whereabouts of the type-specimen is not known to the writer.

160. *Momotus subrufescens subrufescens* Sclater.

Momotus subrufescens SCLATER, Rev. et Mag. Zoöl., (2), V, 1853, 489 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.).—SCLATER, Proc. Zoöl. Soc. London, "1857," 1858, 252 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1862, 261 ("Santa Marta"; references).—SCHLEGEL, Mus. Pays-Bas, III, Momotus, 1863, 3 ("Santa Marta," in range).—GRAY, Hand-List Birds, I, 1869, 79 ("Santa Marta," in range).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 102 (range).—GIEBEL, Thes. Orn., II, 1875, 612 ("Santa Marta"; references).—SALVIN and GODMAN, Ibis, 1880, 174 (Santa

Marta).—SHARPE, Cat. Birds Brit. Mus., XVII, 1892, 321 (Santa Marta).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1895, 459 (Santa Marta, in range).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta").—BANGS, Auk, XVI, 1899, 137, in text ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 135 (Bonda).—THAYER and BANGS, Bull. Mus. Comp. Zool., XLVI, 1906, 215, in text ("Santa Marta"; crit.).
Momotus momota subrufescens ALLEN, Bull. Am. Mus. Nat. Hist., V, 1893, 125 ("Santa Marta").—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 155, in text (Santa Marta, in range; crit.; ref. orig. descr.).
Momotus bahamensis subrufescens HELLMAYR, Nov. Zool., XIII, 1906, 41, in text (Santa Marta, in range; crit.).
Momotus subrufescens subrufescens RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 455 (diag.; range; references), 462, footnote ("Santa Marta"; meas.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 271 ("Santa Marta"; crit.).

Additional records: Tucurinca (Carriker).

Twenty-five specimens: Bonda, Mamatoco, La Tigrera, Santa Marta, Las Vegas, Fundación, and Don Diego.

A study of this fine series has led to several conclusions, which seem worthy of record. First, *M. subrufescens* is clearly specifically distinct from *M. momota*, differing in smaller size, larger amount of terminal black on the rectrices, distinctly greenish throat, more rufescent posterior under parts, paler, more buffy-tinged upper parts, and more concealed, more cinnamon rufous area behind the nape-cincture, which latter also averages narrower. Second, among the forms studied in this connection, *M. subrufescens* seems most closely allied to *M. nattereri*, but should probably be kept specifically distinct therefrom. Unfortunately we have not seen either *M. microstephanus* or *M. ignobilis*. Third, there is one specimen (No. 44,411) from Don Diego, on the north coast, which differs so decidedly from the general run as to suggest that it may represent a local form. It is very richly colored below, about like *M. bahamensis*, and above is strongly shaded with the same rich rufous tawny color as overspreads the upper parts in *M. s. conexus* Thayer and Bangs (which we find no difficulty in distinguishing when smoothly made up specimens are compared), which, on the other hand, is purer green above than the typical form.

This is strictly a Tropical Zone species, ranging over the whole of the lowlands from Dibulla to Fundación, as well as those of the Rio Cesar-Rio Rancheria Valley. It is essentially littoral in its local distribution, for while it ascends into the hills in some places up to 3,000

feet, it is ordinarily not found above 1,000 feet. It was one of the first species from this region to be described as new, the type being a specimen received from Verreaux, which came into Sclater's hands and was given a distinctive name in 1853. All the collectors who have worked in this region have met with it here, and good series of specimens are extant. According to the experience of the writer it frequents the forest and heavier woodland, especially where there is plenty of undergrowth, keeping near the ground. The birds are always found in pairs, and are very tame; they feed on the ground a good deal, digging into the earth for worms, etc. The nest is made in a hole dug in the bank along a stream, but the writer has not seen the eggs.

Family *ALCEDINIDÆ*. KINGFISHERS.

161. *Chloroceryle ænea ænea* (Pallas).

Ceryle ænea ænea CARRIKER, Ann. Carnegie Mus., VI, 1910, 493 (Santa Marta [region]).

Five specimens: Don Diego, Punto Caiman, Trojas de Cataca, and Dibulla.

These appear to have the abdominal white patch more restricted, and the white spots on the inner webs of the rectrices larger, than in two males from French Guiana, but whether a series from the latter locality would bear out these differences is an open question.

A species which is strictly confined to the Tropical Zone lowlands, and is fairly common along the innumerable waterways around the Cienaga Grande, but always in the mangroves. One was taken at Don Diego and another at Dibulla, both in the heavy forest along small creeks.

162. *Chloroceryle inda* (Linnæus).

Ceryle inda ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 276 (Don Diego).

Two specimens: Buritaca and Don Diego.

Apparently the rarest of the family in this region. Mr. Smith is the only collector who has met with it, securing only three specimens in all, two at Don Diego, May 3, 1899, and one at Buritaca, September 18, 1899. All of these are females, not distinguishable from a series from Panama and Dutch and French Guiana.

163. *Chloroceryle americana americana* (Gmelin).

Ceryle americana SALVIN and GODMAN, Ibis, 1880, 174 (Minca).—SHARPE, Cat. Birds Brit. Mus., XVII, 1892, 131 ("Santa Marta" and Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 136 (Bonda and Cienaga).

Ceryle americana septentrionalis (not of Sharpe) CARRIKER, Ann. Carnegie Mus., VI, 1910, 492 (Santa Marta [region]; crit.).

Chloroceryle americana [subsp.] RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 432, footnote (Santa Marta [region]; meas.).

Twenty-one specimens: Bonda, Don Diego, Minca, Mamatoco, Trojas de Cataca, Fundación, and Santa Marta.

According to Mr. Ridgway "birds from Venezuela and Colombia are recognizably different from the Guiana form," and probably deserve to be named. At the present writing only three specimens of topotypical *americana* from French Guiana are available. The single male is certainly not distinguishable in any way from Colombian males, but oddly enough the two females show a character not evident in the other sex, namely, the practically unspotted condition of the outer webs of the remiges. Not one of the Colombian females approaches these two examples in this respect, all being prominently spotted with white on the wings. But until the constancy of this character can be demonstrated by a larger series we are unwilling to take the responsibility of making a formal separation.

This kingfisher is a bird of the Tropical Zone, ranging over the whole of the lowlands and up into the foothills to at least 2,000 feet, along the streams.

164. *Chloroceryle amazona* (Latham).

Alcedo amazona SCHLEGEL, Mus. Pays-Bas, III, 1874, 2 ("Santa Marta").

Ceryle amazona BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 136 (Bonda).

Six specimens: Bonda, Mamatoco, Dibulla, Fundación, and Santa Marta.

We are unable to discover any geographical differences in a series of this species coming from various parts of its range. Nos. 43,039, September 5, and 44,780, February 27, are young males, with the rufous pectoral band merely indicated.

This species is found throughout the Tropical Zone lowlands along all streams of sufficient size.

Megaceryle alcyon alcyon (Linnæus).

Ceryle alcyon SHARPE, Cat. Birds Brit. Mus., XVII, 1892, 125 ("Santa Marta").—SALVIN and GODMAN, Biol. Centr.-Am., II, 1895, 472 ("Santa Marta," in range, *ex* Sharpe).

A specimen in the British Museum (received from the Tweeddale Collection), purporting to have come from Santa Marta, is the only record for the Belted Kingfisher for Colombia, and one of the very few from South America, this being beyond its normal winter range.

165. Megaceryle torquata torquata (Linnæus).

Ceryle torquata SALVIN and GODMAN, Ibis, 1880, 174 (Rio Manzanares).—SHARPE, Cat. Birds Brit. Mus., XVII, 1892, 121 (Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 136 (Bonda).

Seven specimens: Bonda and Punto Caiman.

The Punto Caiman specimen is albinistic, having many white feathers among the rufous ones of the under surface. Some of the specimens show a good deal of white on the secondaries in the form of spots, as in *M. t. stictipennis*.

Simons took a single specimen of this species along the Rio Manzanares near Santa Marta. Mr. Brown and Mr. Smith secured a few in this same section, and the writer shot a single example at Punto Caiman. It is found only in the lowlands about the lagoons and larger streams.

Family BUCCONIDÆ. PUFFBIRDS.

166. Nonnula frontalis pallescens Todd.

Nonnula frontalis pallescens TODD, Proc. Biol. Soc. Washington, XXXII, 1919, 116 (Fundación; orig. descr.; type in coll. Carnegie Mus.).

Seven specimens: Fundación and Tucurínca.

Three specimens from the State of Santander, Colombia, corresponding closely to the original description of *Malacoptila frontalis* Selater (described from the "interior of Colombia") show that the bird of the coast region is a strongly marked form, differing in the much paler coloration of the under surface. In the typical form the throat and breast are rich ochraceous tawny, passing into buffy posteriorly and into white on the under tail-coverts, while in the new form the throat and breast are cinnamon buff or clay-color, and the abdomen as well as the under tail-coverts nearly white. The upper parts are the same in both. Males average a little more richly colored below

than females, but the type has been chosen from the latter sex because it so happens that all the comparable specimens of true *frontalis* belong to that sex. The specimen from Algodonal, on the lower Magdalena River, referred to by Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 344), undoubtedly belongs to this same pale race, while the Panama examples may be different again. Besides the above, we have three specimens from the Sinu region of Colombia, farther to the eastward along the coast.

On the first trip to Fundación this bird was not met with at all, but on the second it was one of the first birds shot. It was more numerous at Tucurínca, in the heavy forest of the alluvial plain, and probably ranges over the whole of this plain surrounding the Ciénaga Grande, and thence over into the Magdalena basin.

167. *Malacoptila mystacalis* (Lafresnaye).

Malacoptila mystacalis BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 134 (Onaca, Valparaiso, and Las Nubes).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 342 ("Santa Marta Mountains").

Thirteen specimens: Onaca, Valparaiso, Cincinnati, and Las Taguas. In juvenal plumage, illustrated by Nos. 42,476 and 42,589, Cincinnati, July 10 and 25, the color-pattern is like that of the adult, but the colors are duller, the rufous of the throat and breast being still imperfectly developed.

This species has thus far been taken in this region only in the Subtropical Zone of the San Lorenzo and Horqueta, between 4,000 and 6,000 feet, apparently not reaching the main Sierra Nevada. It is confined to the heavy forest, and is not at all abundant, being a quiet and rather stupid bird. The nest is placed at the extremity of a hole in a bank of earth, excavated by the birds to a depth of nearly two feet (in the case of the one examined). The tunnel proper is from two to three inches in diameter, while the nest-chamber at the end is enlarged to be about six inches across and four inches high. The nest is very slight—merely a few twigs and dead leaves. The one examined was in a bank by the roadside, where people and animals were passing daily; it contained one young bird, nearly fully fledged.

168. *Hypnelus ruficollis ruficollis* (Wagler).

Bucco ruficollis SCLATER, Ann. and Mag. Nat. Hist., (2), XIII, 1854, 361 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1862, 270 ("Santa Marta").—WYATT, Ibis, 1871, 374 (Santa Marta).—SALVIN and GODMAN, Ibis, 1879, 205 (Valle de Upar); 1880, 175 (Santa Marta).—SCLATER, Mon. Jacamars and Puffbirds, 1880, 89, pl. 29 (Santa Marta and Valle de Upar; meas.).—SCLATER, Cat. Birds Brit. Mus., XIX, 1891, 187 (Santa Marta and Valle de Upar).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1896, 514 (Santa Marta, in range).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 135 (Santa Marta and Bonda); XXI, 1905, 280 (Bonda; descr. nest and eggs).
Hypnelus ruficollis ruficollis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 382 (Santa Marta localities and references).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 341 (Bonda suggested as type-locality).

Twenty-eight specimens: Bonda, Mamatoco, Santa Marta, Fundación, Punto Caiman, Dibulla, and Rio Hacha.

There is some individual variation apparent, affecting the intensity of the tawny color on the throat and the amount of spotting on the flanks. The type-locality of the present form, according to Sclater, is Cartagena, whence came the specimens collected by Haeberlin constituting Wagler's types.

An abundant bird throughout the whole of the littoral Tropical Zone, except in the forested section of the north coast, being most numerous in the drier portions. It prefers the open scrub, with scattering trees. It is very sluggish and stupid, sitting quietly for long periods, and is very easily approached. The natives call it "pajaro bobo" (foolish bird).

Mr. Smith sent in a set of three eggs, collected at Bonda, May 17. They are "clear dull white, sub-spherical." They were found in the clay nest of *Furnarius leucopus exilis*.

169. *Hypnelus ruficollis decolor* subsp. nov.

Six specimens: Rio Hacha.

The Rio Hacha birds differ from the Santa Marta series proper in their paler coloration throughout. The upper parts are paler, duller brown, and the lower parts are also paler, less buffy, nearly white in fact. The ochraceous wash on the throat is conspicuously paler and less extended, and the nasal plumes are usually dull whitish, with little or no buffy tinge. The new form thus varies in an opposite direction from *Hypnelus ruficollis coloratus*, of the humid section south of

Lake Maracaibo, and is probably restricted to the arid coast region of the Goajira Peninsula, where it is one of the characteristic birds.

Type, No. 45,649, Collection Carnegie Museum, adult female; Rio Hacha, Colombia, May 6, 1914; M. A. Carriker, Jr.

170. **Notharchus hyperrhynchus** subsp.

Five specimens: Mamatoco and Fundación.

Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 340) has recently called attention to the differences between Nicaragua specimens of this species on the one hand and those from Panama southward on the other. He adopts for the latter the name *leucocrissus*, and the writer has verified his conclusions after an examination of the same material. Quite unexpectedly, Nicaraguan skins, assumed to represent *dysoni*, prove to be appreciably different from those from Costa Rica, which latter agree in all essential respects with specimens from Panama, western Colombia, Ecuador, and Bolivia. Curiously enough, the Santa Marta specimens are clearly not *leucocrissus*; they are in fact practically indistinguishable from *dysoni*, having the same narrow pectoral band and less heavily marked flanks. The only difference is that the outer primary has less white in the present series, but this by itself seems to be too trifling a character upon which to base a formal separation. To refer these birds to *dysoni*, on the other hand, would leave the distribution of that form discontinuous, so that for the present it seems necessary to hold the matter open for further data.

This bird was first met with at Fundación, where four in all were taken, and later a single specimen was shot at Mamatoco. It is not at all common at the former locality, being found in the open woodland among the tangled masses of vines and low trees.

Family GALBULIDÆ. JACAMARS.

171. **Galbula ruficauda pallens** Bangs.

Galbula ruficauda (not of Cuvier) SALVIN and GODMAN, Ibis, 1879, 205 (Valle de Upar); 1880, 175 (Santa Marta).—SCLATER, Mon. Jacamars and Puff-birds, 1879, 15 (Valle de Upar; meas.).—SCLATER, Cat. Birds Brit. Mus., XIX, 1891, 166 (Santa Marta and Valle de Upar).

Galbula ruficauda pallens BANGS, Proc. Biol. Soc. Washington, XII, 1898, 133 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.).—DUBOIS, Syn. Avium, II, 1903, 1056 (Santa Marta, in range; ref. orig. descr.).

Galbula ruficauda pallida (lapsus) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 135 (Cienaga and Bonda); XXI, 1905, 280 (Bonda; descr. eggs). *Galbula pallens* SHARPE, Hand-List Birds, II, 1900, 194 (ref. orig. descr.; range).—BRAHOURNE and CHUBB, Birds S. Am., I, 1912, 161 (ref. orig. descr.; range).

Additional records: Tierra Nueva (Carriker).

Twenty-nine specimens: Bonda, Cienaga, Dibulla, Rio Hacha, Matatoco, Fundación, and Tucurínca.

In this form the bill (all the measurements, in fact) averages longer than in true *ruficauda*; there is more buffy tinge on the throat, there is a more decided color-difference between the sexes; and the under parts, posterior to the pectoral band, are noticeably paler, sex for sex. The race was described from this region, but is now known to range over into the lower Magdalena and Sinu Valleys.

A species characteristic of the littoral Tropical Zone, ranging over the whole of the lowlands, but more abundant in the drier portions, where the woodland is open above and filled with tangled undergrowth below. In its feeding habits it is not unlike the flycatchers, selecting a perch in the open and catching insects on the wing. Many butterflies are eaten.

A set of two eggs, collected by Mr. Smith at Bonda on April 17, are described as clear glossy white. Simons says that it "builds its nest in the banks of streams."

Family RAMPHASTIDÆ. TOUCANS.

172. *Aulacorhynchus lautus* (Bangs).

Aulacorhamphus albivitta (not *Pteroglossus albivitta* Boissonneau) SALVIN and GODMAN, Ibis, 1879, 206 ([Valley of ?] Chinchicua; crit.).

Aulacorhamphus albivittatus SCLATER, Cat. Birds Brit. Mus., XIX, 1891, 157 ("Santa Marta" and [Valley of ?] Chinchicua).

Aulacorhamphus lautus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 173 (San Miguel; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.); XIII, 1899, 92 (Chirua and La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 133 (Valparaiso, San Lorenzo, El Libano, and Las Nubes).—DUBOIS, Syn. Avium, II, 1903, 1056 (ref. orig. descr.; range).—BANGS, Proc. Biol. Soc. Washington, XXI, 1908, 158, in text (Sierra Nevada de Santa Marta; crit.).—BRAHOURNE and CHUBB, Birds S. Am., I, 1912, 160 (ref. orig. descr.; range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIV, 1915, 640, in text (Santa Marta [region]; crit.).—CORY, Field Mus. Zool. Series, XIII, 1919, 378 (references: range).

Thirty-one specimens: Las Nubes, Valparaiso, Cincinnati, Macotama, San Miguel, Las Vegas, Sierra Nevada de Santa Marta (6,000 feet), Las Taguas, San Lorenzo, Cerro de Caracas, Paramo de Mamarongo, and Heights of Chirua.

Salvin and Godman remarked on the peculiarities of the first pair of these birds received from this region, but did not venture to separate them from *A. albivitta*, so that it remained for Mr. Bangs to give the form a distinctive name. In its characters it is almost exactly intermediate between *A. albivitta albivitta* of Central Colombia and *A. caruleogularis* of Central America, but is manifestly entitled to stand alone. The throat is gray, tinged with blue posteriorly, instead of white or deep blue, as in the other two forms respectively, and there is no red on the bill, which is black, the culminal ridge (except at base) olive yellow, the base of both mandibles narrowly white, with a triangular patch of black at the base of the culmen. Males are noticeably larger than females, the bill especially.

This species is found under exactly the same conditions as *A. calorhynchus*, except that its local range is higher, although overlapping that of the other species at its lower edge. On the San Lorenzo it appears to inhabit the region between about 5,000 and 8,000 feet, and in the Sierra Nevada that between 5,000 and 9,000 feet, in the Subtropical Zone.

173. *Aulacorhynchus calorhynchus* (Gould).

Aulacorhamphus calorhynchus SALVIN and GODMAN, Ibis, 1879, 206 ([Valley of ?] Chinchicua).—SCLATER, Cat. Birds Brit. Mus., XIX, 1891, 155 ([Valley of ?] Chinchicua).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 134 ("Santa Marta"), 158 (Pueblo Viejo; crit.), 172 (Palomina; crit.; type-locality).—BANGS, Auk, XVI, 1899, 137, in text ("Santa Marta Mountains"; range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 133 (Valparaiso).

Additional records: La Concepción, San Antonio (Brown).

Twenty-three specimens: Valparaiso, Cincinnati, Las Taguas, Las Vegas, Pueblo Viejo, and Chirua.

Santa Marta examples are precisely like those from the Andes of Merida, Venezuela, whence came Gould's types. Females have constantly smaller bills than males.

This toucan was added to the fauna of this region by Simons, who secured a specimen in the Valley of Chinchicua, at an altitude of 6,500 feet. Mr. Brown took it in the highlands above Santa Marta, and later

got specimens also at La Concepción, Chirua, San Antonio, Pueblo Viejo, and Palomina. Mr. Smith obtained a series at Valparaiso (Cincinnati). It seems to be a bird of the Subtropical Zone, ranging between 4,000 and 6,000 feet on the forest-clad slopes of the San Lorenzo, but coming down as low as 2,000 feet in the Sierra Nevada proper. It generally goes in pairs or small bands, sometimes high up in the trees, sometimes lower down. It is noisy and active, very inquisitive, and not at all shy.

174. *Pteroglossus torquatus nuchalis* Cabanis.

Pteroglossus torquatus (not *Ramphastos torquatus* Gmelin) SALVIN and GODMAN, Ibis, 1880, 175 (Santa Marta and Minca).—SCLATER, Cat. Birds Brit. Mus., XIX, 1891, 141 (Santa Marta and Sierra Nevada de Santa Marta).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1896, 555 (Santa Marta, in range).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 134 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 133 (Bonda).—CARRIKER, Ann. Carnegie Mus., VI, 1910, 574 (Santa Marta [region]; crit.). *Pteroglossus torquatus nuchalis* RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 341 (Santa Marta references).

Eleven specimens: Bonda, Don Diego, Mamatoco, Fundación, Tucurín, La Tigrera, and Santa Marta.

Every one of these specimens shows the characters ascribed to this form by Mr. Ridgway in his diagnosis when compared with Central American examples. A skin from northern Venezuela, whence came Cabanis' type-specimen, is similar, so that we find no difficulty in recognizing *nuchalis*, although it may be necessary to restrict the name to the bird of these two regions alone.

A species characteristic of the Tropical Zone, inhabiting the whole of the lowlands, but only the lower reaches of the foothills. It is perhaps more numerous in the semi-arid parts of the littoral area, although fairly common also at Fundación, on the other side of the mountains. It is almost always seen in pairs or flocks of from four to ten birds, and is not at all shy, and very inquisitive. Like all of the family, it is strictly a fruit-eater.

***Ramphastos ambiguus abbreviatus* Cabanis.**

Ramphastos tocard (not of Vieillot?) SALVIN and GODMAN, Ibis, 1879, 206 (Manaure).

Ramphastos ambiguus (not of Swainson) SCLATER, Cat. Birds Brit. Mus., XIX, 1891, 128 (Manaure).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 339 (Manaure, in range; *ex* Sclater).

Simons secured an adult male on May 12, 1878, at Manaure, in the foothills of the Eastern Andes, at an altitude of 2,700 feet. No recent collector has met with the bird in the Santa Marta region proper. The record is referred to this form on geographical grounds (compare Chapman, *Bulletin American Museum of Natural History*, XXXVI, 1917, 329), although Mr. Ridgway, on page 336 of his great work, has inadvertently placed it under *R. piscivorus brevicarinatus*.

175. *Ramphastos piscivorus brevicarinatus* Gould.

Ramphastos carinatus (not of Swainson) SALVIN and GODMAN, *Ibis*, 1879, 206 (Manaure; range); 1880, 175 (Minca).—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 133 (Salvin and Godman's reference; crit.).

Ramphastos brevicarinatus SCLATER, *Cat. Birds Brit. Mus.*, XIX, 1891, 126 (Manaure; crit.).—SALVIN and GODMAN, *Biol. Centr.-Am., Aves*, II, 1896, 553 (Manaure, in range).—BANGS, *Proc. Biol. Soc. Washington*, XII, 1898, 134 (Santa Marta), 157 (Pueblo Viejo).—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 133 (Bonda and Cacagualito).

Ramphastos piscivorus brevicarinatus RIDGWAY, *Bull. U. S. Nat. Mus.*, No. 50, VI, 1914, 334 (Santa Marta localities and references; meas.).

Additional records: La Concepción (Brown).

Eighteen specimens: Bonda, Cincinnati, Minca, La Tigrera, Fundación, Don Diego, and Las Vegas.

Not different from Costa Rican examples.

This handsome large toucan is found in all parts of the Tropical Zone, from sea-level up to about 5,000 feet, wherever the forest is sufficiently dense. In the drier portion of the lowlands it keeps to the woodland along the narrow valleys of the various streams. It is rather shy, and not so abundant as some of the other species of this family, probably for the reason that it is hunted a great deal for food by the natives. It has a loud, rather mournful call-note, usually heard in the evening or early morning.

A set of two eggs, taken from a "nest in a large hollow tree," are in the Smith collection, labeled Bonda, May 12. They are soiled white in color, and measure 35×27.5 , which seems small for the size of the bird.

Family PICIDÆ. WOODPECKERS.

176. *Picumnus cinnamomeus cinnamomeus* Wagler.

Picumnus cinnamomeus GRAY, *List Birds Brit. Mus.*, III, iii and iv, 1868, 27 ("Santa Marta").—HARGITT, *Cat. Birds Brit. Mus.*, XVIII, 1890, 527 ("Santa Marta" and Valle de Upar; descr.; references).—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 137 (Bonda).

Eighteen specimens: Bonda, Mamatoco, La Tigrera, Fundación, Tierra Nueva, Dibulla, Río Hacha, Tucurínca, and Fonseca.

This tiny little piculet is a very distinct, isolated species, and appears to be confined to the northern littoral of Colombia. In the Santa Marta region it ranges over the whole of the littoral Tropical Zone from Río Hacha to Fundación, not going above 1,000 feet. Simons found it at Valle de Upar, on the south side of the mountains. It is rare everywhere, and being so small easily escapes notice, the more so from its habits of frequenting the most tangled parts of thickets and masses of vines. It is very tame and may be approached quite closely with a little care.

177. *Picumnus squamulatus* Lafresnaye.

One specimen: Fundación.

This specimen agrees in size with a good series from the coast region of Venezuela, considered by Messrs. Hellmayr and von Seilern (*Archiv für Naturgeschichte*, LXXVIII, 1912, 152) to represent *P. s. obsoletus* Allen. These Venezuelan birds average a little smaller than a series from the State of Boyacá, Colombia, assumed to be practically topotypical *squamulatus*, but we fail to make out any difference in coloration whatever, although considerable seasonal variation exists. The name *obsoletus* is almost certainly based on an individual variant, judging by the description above, since Messrs. Hellmayr and von Seilern state that specimens from the State of Bermúdez are like those from Caracas and Las Quiguas.

A single female was taken at Fundación, August 14, 1913, in the tangled undergrowth of the open woodland, this being the only one seen. The record is interesting as extending the range of this species to the Caribbean coast region of Colombia.

178. *Veniliornis kirkii cecilii* (Malherbe).

Fourteen specimens: Fundación, Punto Caimán, and Tucurínca.

These compare favorably with specimens from the interior of Colombia, although some of them have the wing-coverts slightly tinged with red, verging thus toward the Panama form. The outer rectrices are in some examples distinctly barred, in others nearly plain. The color of the upper parts also varies considerably.

The local range of this woodpecker covers the lowlands contiguous to the Ciénaga Grande, back to the lower edge of the foothills of the

Sierra Nevada. It is found only in the heavy forest of the alluvial plain and in the mangroves along the borders of the Cienaga Grande, and has doubtless entered the region from the Magdalena basin.

179. *Veniliornis oleaginus exsul* Todd.

Veniliornis oleaginus exsul Todd, Proc. Biol. Soc. Washington, XXXIII, 1920, 74 (Sierra Nevada de Santa Marta, 6,000 feet; orig. descr.; type in coll. Carnegie Mus.).

Four specimens: Sierra Nevada de Santa Marta (6,000 feet), Cerro de Caracas, and Paramo de Mamarongo.

The series of the several forms of *Veniliornis fumigatus* examined in this connection shows an astonishing amount of variation in color, which must be taken into account in any attempt at discriminating the geographical races. There are apparently two phases, not correlated with sex or season, although possibly age may have something to do with them. One is golden brown, the other is much darker, between raw umber and mummy brown, in the case of *V. oleaginus fumigatus*. Some individuals in the light phase are almost or quite as bright as duller colored examples of *V. oleaginus aureus* of western Colombia. Santa Marta specimens are close to *fumigatus*, but average darker, deeper brownish olive below in the dark phase, and obviously more uniform. The race from the coast region of Venezuela, inadvertently described by the writer (*Proceedings Biological Society of Washington*, XXIX, 1916, 97) under the name *exiguus* (long antedated by *reichenbachii* of Cabanis and Heine), differs from the Santa Marta bird in having much more white on the remiges, and in being smaller and generally duller.

The first specimens of this species to be taken in this region were two males, shot on the north slope of the Sierra Nevada back of the San Lorenzo, at about 6,000 feet. Later a male was taken on the Cerro de Caracas, on the slope back of San Miguel, at about 6,000 feet, and another at the upper edge of the forest at the foot of the Paramo de Mamarongo, at perhaps 9,000 feet. No others were seen. It is evidently a species characteristic of the Subtropical Zone, and it is very doubtful if it ever goes below 6,000 feet.

180. *Scapanus melanoleucos malherbii* (Gray).

Campephilus malherbii SALVIN and GODMAN, Ibis, 1879, 205 (Atanquez).—HARGITT, Cat. Birds Brit. Mus., XVIII, 1890, 472 (Atanquez).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1895, 448 (Atanquez, in range).—

BANGS, Proc. Biol. Soc. Washington, XII, 1898, 134 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 137 (Bonda, Valparaiso, and El Libano).

Scapanus malherbii RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 172 (Santa Marta localities and references; meas.).

Nineteen specimens: Bonda, Las Nubes, La Tigrera, Las Vegas, Minca, Cincinnati, and Fundación.

With a fair series of specimens, representing various localities in Bolivia, French Guiana, Venezuela, and the interior of Colombia, at our command, we find that intergradation between *S. melanoleucos* and *S. malherbii* is complete, necessitating the reduction of the latter to subspecific rank. There is usually a trace of black on the lores of the male, indicating its close affinity to the other form. No. 41,923, La Tigrera, May 8, is a female in juvenal dress, with the barring below less distinct, more like spotting, especially posteriorly; the lores and malar stripe are buffy brownish white, and the crest is shorter.

A fairly common and very conspicuous species of the Tropical and lower part of the Subtropical Zones, ranging from sea-level up to 6,000 feet on the San Lorenzo, and possibly to about the same altitude in the Sierra Nevada, where, however, the writer has never met with it above 3,000 feet.

181. ***Ceophlæus lineatus mesorhynchus*** Cabanis and Heine.

Ceophlæus lineatus (not *Picus lineatus* Linnæus) HARGITT, Cat. Birds Brit. Mus., XVIII, 1890, 508 ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 134 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 136 (Minca and Valparaiso).

Ceophlæus lineatus mesorhynchus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 148 (Santa Marta localities and references; meas.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 356 ("Santa Marta"; crit.).

Additional records: Cienaga (Univ. Mich. Exp.); San Antonio (Brown).

Three specimens: Bonda and Pueblo Viejo.

This form was based on Costa Rican specimens, with which the above agree. It differs from typical *lineatus* in average smaller size, more decidedly buffy suffusion of the under parts, darker colored bill, and in particular in the heavier streaking of the throat. The barring of the under parts is also more frequently broken up into spots, but this is not the case with every individual.

This must be a rare bird here, for although the writer was on the

watch for it continuously and killed many specimens of *Scapanus melanoleucos malherbii* by mistake for it, he secured but one specimen, at Pueblo Viejo. The available records indicate that it is mainly a bird of the foothills and lower mountain slopes of the Tropical Zone.

182. *Chrysoptilus punctigula ujhelyii* von Madarasz.

Chrysoptilus guttatus (not *Picus guttatus* Spix) HARGITT, Cat. Birds Brit. Mus., XVIII, 1890, 117 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 136 (Cienaga).

Chrysoptilus ujhelyii VON MADARASZ, Orn. Monatsber., XX, 1912, 97 (Aracataca; orig. descr.; type in coll. Budapest Mus.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 171 (ref. orig. descr.; range).

Chrysoptilus punctigula ujhelyii CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 612 ("Santa Marta"; diag.).—CORY, Field Mus. Orn. Series, I, 1915, 306 (Aracataca, in range; diag.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 349 ("Santa Marta"; crit.).

Four specimens: Fundación.

This form, which occupies the lower Magdalena basin, west along the coast to the Rio Sinu, whence we have specimens, is apparently most closely related to *C. p. striatigularis* Chapman (*Bulletin American Museum of Natural History*, XXXIII, 1914, 611), but differs in having the posterior under parts paler, with the spots smaller, while the bars on the back, wings, and tail are narrower and less distinct.

The type-specimen was collected by Mr. J. Ujhelyi at Aracataca, between Fundación and Tucurínca, in January, 1912, and promptly named for this party by Dr. von Madarasz, into whose hands it fell. Mr. Smith had previously collected a single bird at Cienaga, which is probably the extreme limit of its range in this direction. It seems to be confined to the Tropical Zone lowlands around the Cienaga Grande. The four shot at Fundación were all that were seen; they were met with in rather heavy woodland.

183. *Chloronerpes chrysochloros aurosus* Nelson.

Four specimens: Fundación, Don Diego, and Tucurínca.

Up to date this form has been known only from the type, described from eastern Panama. The specimens here recorded, together with two more from Gamarra, Colombia, have been compared with the type and found to agree, most of the characters assigned by Mr. Nelson proving constant on comparison with an equal series of true *chrysochloros* from Bolivia and Argentina. Indeed, *aurosus* is a de-

cidedly well-marked race, differing in its brighter, more golden olive coloration above and on the sides of the head, and deeper, more golden orange hue of the under surface, including the tail. The red of the pileum is also perceptibly brighter, but the dusky area on the distal portion of the primaries is about the same. Measurements are as follows:

No.	Sex.	Locality.	Date.	Wing.	Tail.	Bill.	Tarsus.
42715	♂	Fundación	August 9, 1913.....	123	63	23	17
42782	♂im.	Fundación	August 11, 1913....	124	67	24	17.5
44616	♂	Don Diego	February 2, 1914...	126	64	25	17.5
49467	♂	Tucurínca	September 20, 1915	122	60	25	17
54230	♂	Gamarra	July 9, 1916.....	128	65	23.5	17
54231	♂	Gamarra	July 9, 1916.....	122	69	24	17
Three adult ♂♂ of <i>C. c. chrysochloros</i> average.....				125	75	25	18.4

There is thus very little difference in size between this and the typical form, except that the tail is a little shorter in *aurosus*.

The present records constitute a considerable extension of the known range of this woodpecker, heretofore known only from eastern Panama. It is evidently a Tropical Zone form, apparently most numerous in the region around the Cienaga Grande, where three of the four specimens were taken. They were all found near water or marshy ground, and very likely farther out, nearer the Cienaga Grande and Magdalena River, the bird may be more numerous. The securing of a single example at Don Diego, on the north coast, was most unexpected. One bird was noted at Valle de Upar, in the Rio Cesar Valley, early in August, 1920, but not secured.

184. *Chloronerpes rubiginosus alleni* Bangs.

Chloronerpes yucatanensis uropygialis (not of Cabanis) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 93 (La Concepción and San Miguel; range; crit.).—BANGS, Proc. New England Zoöl. Club, I, 1899, 76 (San Sebastian).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 136 (Valparaiso).

Chloronerpes yucatanensis alleni BANGS, Proc. New England Zoöl. Club, III, 1902, 83 (San Sebastian; orig. descr.; type now in coll. Mus. Comp. Zoöl.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 277 (ref. orig. descr.; syn.).

Chloronerpes alleni BRABOURNE and CHUBB, Birds S. Am., I, 1912, 170 (ref. orig. descr.; range).

Chloronerpes rubiginosus alleni RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 126 (diag.; range; ref. orig. descr.).—CORY, Field Mus. Zoöl. Series, XIII, 1919, 439 (ref. descr.; range).

Twenty-four specimens: Valparaiso, Cincinnati, San Lorenzo, Las Taguas, Las Vegas, San Miguel, and Chirua.

The first specimens of a *Chloronerpes* hailing from this region were referred to the Central American form, *uropygialis*, by both Dr. Allen and Mr. Bangs, but shortly thereafter the acquisition of a good series of the latter race induced Mr. Bangs to describe the Santa Marta form as distinct. Not all of the characters he assigns hold good in the above series. For instance, there is considerable variation, apparently of a purely individual nature, in the extent of the brownish area on the inner webs of the outer rectrices. Again, the barring of these feathers is a very inconstant feature, varying greatly in character and extent in different individuals. Taken as a whole, however, the series is conspicuously different, not only from *C. r. uropygialis*, but also from any other of the numerous races into which this wide-ranging and unusually plastic species has been divided. It is much brighter, more suffused with golden orange, above than true *rubiginosus*, and has the red patch on the head wider, while the dark bars on the under surface are more dusky, less greenish, and the outer rectrices have more or less brown on their inner webs. The two characters last named also serve to distinguish it from the form inhabiting the region immediately to the southward, in the State of Santander, Colombia.

This woodpecker was found most abundantly on the slopes of the San Lorenzo between 4,000 and 7,000 feet, nearly always in the heavy forest, but rarely out in the coffee-plantations in the guamá trees. In the Sierra Nevada it ranges somewhat lower down, mainly between 3,000 and 5,000 feet, but may be considered essentially a species of the Subtropical Zone. It was found breeding at San Miguel (5,500 feet) near our camp, but few were seen above that altitude. Mr. Brown, however, met with it as high up as San Sebastian (6,600 feet), on the south slope of the mountains.

185. *Centurus rubricapillus rubricapillus* Cabanis.

Centurus subelegans (not of Bonaparte) SCLATER, Proc. Zool. Soc. London, 1855, 162 ("Santa Marta").

Centurus tricolor (not *Picus tricolor* Gmelin) WYATT, Ibis, 1871, 115, 381 (Santa Marta).—SALVIN and GODMAN, Ibis, 1879, 205 (Valle de Upar); 1880, 174 (Santa Marta).

Melanerpes tricolor HARGITT, Cat. Birds Brit. Mus., XVIII, 1890, 174 (Valle de Upar).

- Melanerpes wagleri sancta-marta* BANGS, Proc. Biol. Soc. Washington, XII, 1898, 134 ("Santa Marta"; orig. descr.; type now in Mus. Comp. Zool.; meas.; crit.).—BANGS, Proc. New England Zool. Club, II, 1900, 18 ("Santa Marta"; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 136 (Santa Marta and Bonda).
- Melanerpes sancta-marta* SHARPE, Hand-List Birds, II, 1900, 211 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 172 (ref. orig. descr.; range).
- Centurus subelegans sancta-marta* DUBOIS, Syn. Avium, II, 1903, 1058 (Santa Marta, in range; ref. orig. descr.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, VI, 1914, 53 (diag.; range; references). 74 (meas.).
- Centurus wagleri sancta-marta* ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 281 (Mamatoco; descr. nest and eggs).
- Melanerpes terricolor sancta-marta* HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 150, in text (Santa Marta region; crit.).
- Melanerpes rubricapillus rubricapillus* CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 351 (Bonda; crit.).

Twenty specimens: Bonda, Mamatoco, Santa Marta, Don Diego, Rio Hacha, and Fundación.

The proper name for this woodpecker has been the subject for considerable difference of opinion, as the above list of references shows. It was described by Mr. Bangs in 1898 under the name *sancta-marta*, but this designation is long antedated by *Centurus rubricapillus* Cabanis, 1862, a name provisionally applied to a bird from Barranquilla, Colombia, which we now know is precisely the same as that from the Santa Marta region. If, as claimed by Messrs. Hellmayr and von Seilern, *Centurus subelegans* Bonaparte is not pertinent, Cabanis' name must be adopted as the earliest valid specific designation for the members of this group, as already said by Dr. Chapman. With a series of sixty-two specimens, representing various parts of the general range of the species, we find great difficulty in discriminating any of the several geographic races commonly recognized. There is certainly no constant difference in general color correlated with locality, although there is considerable seasonal variation. The differences in size are too slight and inconstant to be seriously considered. Costa Rican examples (*wagleri*) seem to have the abdominal red patch more restricted, and to have rather more white on the lateral rectrices, than the typical form, but it is a question whether it is worth while to recognize this difference in nomenclature. Birds from Venezuela (*terricolor*), on the other hand, have rather less white on the lateral

rectrices, while there is a tendency for the red of the crown to be separated from that of the nape by a grayish brown band. Many examples are practically indistinguishable, however, and it is doubtful if *terricolor* ought to be granted recognition. Specimens from the interior of Colombia (*neglectus*), so far as we can see, present no special peculiarities.

This is the common woodpecker of the Tropical Zone lowlands. It is found over the whole of the low country surrounding the Sierra Nevada, but is rarely seen over 1,000 feet above the sea. It prefers the more arid parts, especially where there is plenty of the giant cactus, in which it often digs its nest. Wyatt recorded it in the mimosa thicket near Santa Marta in 1870, and Simons secured specimens here and at Valle de Upar during his trip. Mr. Smith sent in a section of a tree-trunk containing a nest, together with one egg, secured at Matatoco, on April 10. It was observed at Fonseca and Valencia by the writer in the summer of 1920.

***Tripsurus pucherani pucherani* (Malherbe).**

Zebrapicus pucherani MALHERBE, Mon. Pictidées, II, 1862, 227 ("Santa Marta," in range).

The only authority for the inclusion of this species in the present list is that above quoted. Malherbe gives no particulars, and it is very doubtful if this Pacific Coast form ever ranges so far to the eastward as such a record would imply.

Family TROGONIDÆ. TROGONS.

186. *Chrysotrogon caligatus columbianus* Chapman.

Trogon caligatus (not of Gould) SALVIN and GODMAN, Ibis, 1880, 174 (Minca; crit.).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XVII, 1892, 465 (Minca).—

ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 135 (Cacagualito and Minca). *Chrysotrogon caligatus* RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 786 (Minca and Cacagualito, in range; references).

Chrysotrogon caligatus columbianus CHAPMAN, Bull. Am. Mus. Nat. Hist. XXXIII, 1914, 607 ("Santa Marta"; meas.; crit.); XXXVI, 1917, 317 ("Santa Marta"; crit.).—CORY, Field Mus. Zoöl. Series, XIII, 1919, 330 ("Santa Marta," in range).

Nine specimens: Bonda, Cincinnati, and Fundación.

The adult males of this series agree with others from Colombia in having the purplish blue sheen of the nape extended over the posterior part of the crown, and the pectoral band of the same color apparently

narrower. Some Costa Rican specimens approach them closely in these respects, and the differences appear to be fully bridged over by individual variation in both series, and to be merely of an average character. Females of the present form, however, are more purely gray, less blackish, and the form is doubtless entitled to recognition.

Simons secured this trogon at Minca, and Mr. Smith also took it at the same place, as well as at Bonda and Cacagualito. With the exception of a single specimen shot at Cincinnati, June 13, 1911, the writer failed to find it in the region around Santa Marta, all his specimens having been taken at Fundación, where it was fairly common (as trogons go). Here it was found in the open woodland as a rule, and high up in the trees. It was recorded as far east as Loma Larga by the writer in July, 1920, and was not rare at Valencia.

187. *Trogonurus personatus personatus* (?) Gould.

Trogon personatus BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 93 (Chirua, La Concepción, and Macotama).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 135 (Valparaiso, Las Nubes, and El Libano).

Twenty-five specimens: Las Nubes, El Libano, Valparaiso, Cincinnati, Sierra Nevada de Santa Marta (6,000 feet), Las Taguas, Pueblo Viejo, Las Vegas, San Lorenzo, San Miguel, and Heights of Chirua.

These agree with Gould's plate (*Monograph of the Trogonidae*, Ed. 2, 1875, pl. 10), purporting to represent the type. According to von Berlepsch and Taczanowski (*Proceedings Zoölogical Society of London*, 1884, 307), the Ecuador bird is appreciably different. The series includes two immature females from Las Vegas, May 31.

A fairly common species throughout its range, which lies in the Subtropical Zone, in the forest-clad slopes of the mountains between 4,500 and 7,000 feet. It is a quiet bird, remaining motionless on its perch for long periods at a time, then flying suddenly for a distance of fifty or a hundred feet. It keeps well up in the trees, but not in their very tops. Like all of the family, it is strictly a fruit-eater.

188. *Curucujus melanurus macrourus* (Gould).

Sixteen specimens: Fundación, Tucurínca, Tierra Nueva, and Trojas de Cataca.

These are larger than Bolivian specimens, assumed to represent true *melanurus*; the red below is paler and more pinkish, especially posteriorly, in both sexes; and the crown, upper tail-coverts, and middle

rectrices average more greenish or bronzy, less bluish. A young female (October 10) has the outer webs of the outer rectrices barred and the secondaries with coarsely mottled webs, while the finely barred area on the wing-coverts is faintly indicated in gray and black.

A Magdalena Valley form, invading our region only in the lowlands around the Cienaga Grande. It was fairly common at Fundación, also at Valencia, in the valley of the Rio Cesar, where the conditions are somewhat similar.

189. *Pharomachrus festatus* Bangs.

Pharomacrus fulgidus (not *Trogon fulgidus* Gould) SALVIN and GODMAN, Ibis, 1879, 205 (Valley of Chinchicua).

Pharomacrus antisiensis (not *Trogon antisiensis* D'Orbigny) OGILVIE-GRANT, Cat. Birds Brit. Mus., XVII, 1892, 433 (Chinchicua Valley).

Pharomachrus festatus BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 92 ([Heights of] Chirua; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 135 (El Libano).—SHARPE, Hand-List Birds, II, 1900, 146 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1059 (ref. orig. descr.; range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 735 (diag.; range; ref. orig. descr.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 153 (range; ref. orig. descr.; crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 149 (ref. orig. descr.; range).—CORY, Field Mus. Zoöl. Series, XIII, 1919, 320 (ref. descr.; range).

Eight specimens: El Libano, Valparaiso, Sierra Nevada de Santa Marta (6,000 feet) Las Vegas, and Heights of Chirua.

The single specimen of a *Pharomachrus* secured by Simons in the Valley of Chinchicua was a young bird, and was not recognized as belonging to an undescribed form by either Salvin and Godman or the author of the "Trogones" in the *Catalogue of the Birds in the British Museum*. It remained for Mr. Bangs to describe adult specimens sent in by Mr. Brown from the Heights of Chirua. It is a very distinct species, the male differing from those of both *P. antisiensis* and *P. auriceps* in the color-pattern of the tail, which is black, with the three outer rectrices white for their terminal third or more, the color extending obliquely in towards the shaft of each feather. The present series bears out all the other characters assigned to the species by the describer. The upper tail-coverts are certainly relatively longer in this form than in either of the two allied species, extending more than an inch beyond the tail in the adult male. No. 38,608 (March 20) is

apparently an immature male, having the middle wing-coverts and middle rectrices tipped with buffy. The tail-pattern is like that of the adult male, except that the white is more restricted; otherwise the plumage is like that of the adult female.

This magnificent trogon is a Subtropical Zone species, confined to the heavy forest between the altitudes of 5,000 and 8,000 feet, and is a rare bird. During the ripening season of the coffee the birds gather along the edges of the upper part of the hacienda Cincinnati (5,000 to 5,500 feet) and feed on the ripe coffee berries. A nest was noted at this point, built in an old cavity made by *Scapanus melanoleucos malherbii* in the top of an old dead stub of a tree, about fifteen feet from the ground. Unfortunately the writer was unable to return to investigate it further.

It was thought at first that this species was peculiar to the Santa Marta region, but we now know that it occurs in northern Venezuela also, from which country the Carnegie Museum has several specimens.

Family MICROPODIDÆ. SWIFTS.

190. *Chætura spinicauda spinicauda* (Temminck).

Chætura spinicauda ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 137 (Cacagualito).

Chætura spinicauda fumosa (not of Salvin) HELLMAYR, Verh. Orn. Ges. Bayern, VIII, "1907," 1908, 161 (Cacagualito, in range, *ex* Allen).

Chætura cinereiventris fumosa RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V 1911, 725 (Cacagualito, in range).

Nine specimens: Las Vegas.

These agree substantially with authentic specimens from Trinidad and Cayenne, both in size and color. *C. s. fumosa*, of which we have six specimens from Costa Rica, differs from *spinicauda* in its larger size, brighter, blacker coloration, and darker gray rump-patch. It is clearly conspecific with *spinicauda*, but not with *cinereiventris*, as given by Mr. Ridgway. Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 277) speaks of specimens from western Colombia as being larger, whereas his measurements show them to be the reverse, and to agree with the Las Vegas skins here recorded.

This swift, like its larger cousin *Streptoprocne zonaris albicincta*, is here today and gone tomorrow, perhaps feeding over the San Lorenzo in the morning and over the Snow Peaks of the Sierra

Nevada in the afternoon. It has never been noted except on the wing, and the flocks have the habit of circling repeatedly over some hill or ridge in quest of insects, at which time they are not easily frightened away by shooting until ready to leave. On one occasion (June 9, 1913) at Las Vegas eight birds were secured out of one flock under such circumstances.

191. *Streptoprocne zonaris albicincta* (Cabanis).

Hemiprocne zonaris (not *Hirundo zonaris* Shaw) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 158 ("Santa Marta"; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 137 (Bangs' reference).

Streptoprocne zonaris albicincta RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 697 (Sierra Nevada and La Concepción, in range).

Additional records: San Lorenzo, 4,500 feet (Univ. Mich. Exp.).

Three specimens: Pueblo Viejo and San Miguel.

These specimens agree well in size and color with Costa Rican skins, showing no approach to the characters of *S. zonaris altissima* Chapman.

This species doubtless ranges over the whole of this region, from sea-level up to the higher altitudes, in its search for food. While blasting out the intake for a flume at Cincinnati on March 19, 1917, a colony of this large swift was discovered nesting in a shallow cavern behind a waterfall. The place was absolutely inaccessible, so that no idea of the number of nests could be had. Only one nest, which happened to be near the top, was secured, together with the occupants, which had been stunned by the blasting, and proved to be an adult female and two recently hatched young. The nest resembled very closely that of the Chimney Swift, being composed of twigs fastened together with saliva. The birds entered and left the cavern by dashing through the curtain of water falling over the front of it. The altitude of the site was about 4,300 feet.

Family TROCHILIDÆ. HUMMINGBIRDS.

192. *Simonula floriceps* (Gould).

Trochilus floriceps GOULD, Athenæum, No. 1329, April 16, 1853, 481, in text (Sierra Nevada de Santa Marta, 5,000 ft.; orig. descr.; type now in coll. Brit. Mus.).—GOULD, Proc. Zool. Soc. London, "1853," 1854, 62 (Sierra Nevada de Santa Marta; descr.).—GRAY, Hand-List Birds, I, 1869, 142 ("Columbia").—GIEBEL, Thes. Orn., III, 1877, 677 (references).

- Metallura floriceps* REICHENBACH, Aufz. der Colibri, 1854, 8 (in list of species).—REICHENBACH, Troch. Enum., 1855, 5 (in list of species).
- Adelomyia floriceps* BONAPARTE, Rev. et Mag. Zoöl., (2), VI, 1854, 253 (in list of species).—GOULD, Mon. Trochilidæ, III, 1855, pl. 202 and text (San Antonio; descr.; references).—MULSANT and VERREAUX, Mem. Soc. Imp. Sci. Nat. Cherbourg, XII, 1866, 215 (in list of species).
- Anthocephala floriceps* CABANIS and HEINE, Mus. Heineanum, III, 1860, 72, footnote (references).—GOULD, Introd. Trochilidæ, oct. ed., 1861, 115 (references; range).—GOULD, Mon. Trochilidæ, I, 1861, lxxviii (references; range).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 87 (range).—MULSANT, Ann. Soc. Linn. Lyon, n. s., XXII, 1875, 220 (in list of species).—MULSANT, Hist. Nat. Ois.-Mouches, III, 1876, 125 (descr.; references; range).—ELLIOT, Smithsonian Contr. to Knowledge, XXIII, Art. V, 1879, 183 (syn.; descr.; *ex* Gould; range).—SALVIN and GODMAN, Ibis, 1881, 595 (San José; crit.).—VON BERLEPSCH, Journ. f. Orn., XXXV, 1887, 335 (Valle de Upar [error!] *fdc* Gould and Simons).—BOUCARD, Humming Bird, II, 1892, 74 ("Santa Marta," in range).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 172 (San Antonio and San José; descr.; references).—SALVIN, Bull. Brit. Orn. Club, III, 1893, 8, in text (Sierra Nevada de Santa Marta; crit.).—BOUCARD, Gen. Humming Birds, 1893, 51 (references; descr.; range).—SIMON, Cat. Fam. Trochilidæ, 1897, 23 (Sierra Nevada de Santa Marta, in range).—SIMON, Feuille des Jeunes Naturalistes, (3), XXVII, 1897, 173 (Sierra Nevada de Santa Marta, in range).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 158 (Pueblo Viejo).—BANGS, Auk, XVI, 1899, 137, in text (Santa Marta [region], 138 (San Antonio, San José, and Pueblo Viejo).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 94 (Pueblo Viejo, Santa Cruz, La Concepción, San Francisco, and Chirua; plum.).—DUBOIS, Syn. Avium, I, 1900, 146 (ref. descr.; range).—HARTERT, Tierreich, Lief. 9, 1900, 102 (references; descr.; range).—SHARPE, Hand-List Birds, II, 1900, 119 (Sierra Nevada de Santa Marta, in range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 140 (Valparaiso).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 124 (ref. descr.; range).—SIMON, Cat. Fam. Trochilidæ, 1921, 139 (descr.), 347 (references; range).
- Simonula floriceps* CORY, Field Mus. Zoöl. Series, XIII, 1918, 226 (references; range).

Four specimens: Las Taguas, Pueblo Viejo, and Chirua.

One adult and one immature male, and two adult females. Females are slightly paler, less grayish, below.

This was the first of the several species of hummingbirds peculiar to the Santa Marta region to come to the notice of naturalists, and still remains one of the rarest. Gould tells us that his type, which he received from Mr. Linden of Brussels, had been collected by the brother-in-law of that gentleman near the Indian village of San An-

tonio, in the Sierra Nevada de Santa Marta at an altitude of 5,000 feet. In describing it he did not indicate its exact systematic position, but later on, following Bonaparte, he placed it in *Adelomyia*, while Reichenbach referred it to *Metallura*. A few years later Cabanis and Heine made it the type of a new genus, *Anthocephala*, where by common consent it has remained ever since, but unfortunately this name is preoccupied in Vermes (with a masculine termination, however), and has recently been replaced by *Simonula*³² Chubb (*Birds of British Guiana*, I, 1916, 413). The species continued to be known from the type alone (a male) until 1881, when Salvin and Godman reported the capture of a second specimen, a female, by Simons at San José, March 30, 1880. Two other examples listed under this species by Salvin in 1892 proved to belong to a different one, shortly described as *A. berlepschi*. Mr. Brown took a single male at Pueblo Viejo on his first trip, and later on succeeded in securing no less than nine additional specimens from various points in the Subtropical Zone of the Sierra Nevada. Mr. Smith secured a single specimen at Valparaiso (Cincinnati). To the above list of specimens we now add four more, making seventeen in all.

A rare bird, usually found in the forest, or in smaller tracts of woodland. The only localities in the San Lorenzo district for which there are any records are in the vicinity of Cincinnati, at about 4,000 to 5,000 feet elevation. In the Sierra Nevada, however, it ranges lower down, from 2,000 to 5,500 feet. It was noted, but not secured, at San Miguel, feeding from the blossoms of a banana. As a rule it keeps rather low down, feeding about the flowers in the undergrowth.

193. *Chrysolampis elatus* (Linnæus).

Chrysolampis moschitus (not *Trochilus moschitus* Linnæus) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 140 (Bonda).

Chrysolampis moschitus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 666 (Bonda, in range; meas.).

Nine specimens: Bonda, Don Diego, Cincinnati, and Dibulla.

Of this widely distributed Tropical Zone species three specimens were taken in June at Cincinnati, where they were feeding from the flowers of the guamas (shade-trees for coffee). At Dibulla two were taken, while Mr. Smith secured a series at Bonda and Don Diego. We

³² S. "*chloriceps*" is named as the type, but this is of course a mere slip of the pen for *floriceps*.

are inclined to think that the bird is a regular although rather rare resident of the lowlands and lower foothills, ascending into the mountains in search of food when not breeding.

194. *Chætocercus astreans* (Bangs).

Acestrura mulsanti (not *Ornismya mulsanti* Bourcier) SALVIN and GODMAN, Ibis, 1879, 205 (Atanquez).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 406 (Atanquez).—SIMON, Cat. Fam. Trochilidæ, 1921, 403, 404, note (crit.).

Acestrura astreans BANGS, Proc. New England Zool. Club, I, 1899, 76 (San Sebastian [type-locality] and El Mamon; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 137 (Valparaiso and Bonda).

Chætocercus astreans BRABOURNE and CHUBB, Birds S. Am., I, 1912, 145 (ref. orig. descr.; range).—CORY, Field Mus. Zool. Series, XIII, 1918, 301 (ref. orig. descr.; range).

Acestrura astrans SIMON, Cat. Fam. Trochilidæ, 1921, 239 (descr.), 404 (ref. orig. descr.; range).

Twenty-two specimens: Cincinnati and Las Taguas.

Only one of the females in this series shows any trace of an interrupted pectoral band of greenish, as mentioned in the original description.

This diminutive hummingbird is evidently a species belonging to the Subtropical Zone, and is confined to the west and south slopes of the Sierra Nevada and San Lorenzo. Simons secured a female at Atanquez, as low down as 2,700 feet, however, and Mr. Smith sent in a specimen purporting to come from Bonda, which locality, if not an error, is certainly a most exceptional record. The writer first took a pair in the forest at Las Taguas at 5,000 feet, and saw others, but later found it abundant in the coffee hacienda of Cincinnati in July, the season when the shade trees were in bloom. During flight the wings of this bird make a buzzing sound exactly like that made by a big bumblebee.

M. Simon says that the female specimen sent in by Simons from Atanquez is referable to *C. mulsanti*, but we venture to doubt this determination on geographic grounds.

195. *Oxygogon cyanolæmus* Salvin and Godman.

Oxygogon cyanolæmus SALVIN and GODMAN, Ibis, 1880, 172, pl. 4, fig. 2 (Sierra Nevada de Santa Marta; orig. descr.; type now in coll. Brit. Mus.; crit.).—REICHENOW and SCHALOW, Journ. f. Orn., XXVIII, 1880, 316 (reprint orig. descr.).—SHARPE, in Gould's Mon. Trochilidæ, Supplement, 1883,

pl. [41] and text (descr. and range, *ex* Salvin and Godman).—D'HAMONVILLE, Bull. Soc. Zool. France, VIII, 1883, 79 (descr.; crit.).—VON BERLEPSCH, Journ. f. Orn., XXXV, 1887, 335 (Santa Marta [region], *ex* Salvin and Godman).—BOUCARD, Humming Bird, II, 1892, 74 (Sierra Nevada de Santa Marta, in range; ref. orig. descr.).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 341 (Sierra Nevada de Santa Marta; descr.; references).—BOUCARD, Gen. Humming Birds, 1895, 65 (references; descr.; range).—SIMON, Cat. Fam. Trochilides, 1897, 35 (Sierra Nevada de Santa Marta, in range).—SIMON, Feuille des Jeunes Naturalistes, (3), XXVIII, 1898, 5 (Sierra Nevada de Santa Marta, in range).—BANGS, Auk, XVI, 1899, 138 (Sierra Nevada de Santa Marta; Salvin and Godman's record).—DUBOIS, Syn. Avium, I, 1900, 159 (ref. orig. descr.; range).—HARTERT, Tierreich, Lief. 9, 1900, 167 (references; descr.; range).—SHARPE, Hand-List Birds, II, 1900, 133 ("Santa Marta," in range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 138 (Salvin and Godman's reference).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 139 (ref. orig. descr.; range).—CORY, Field Mus. Zool. Series, XIII, 1918, 273 ("Santa Marta"; references; range).—SIMON, Cat. Fam. Trochilidæ, 1921, 205 (descr.), 384 (references; range).

Nineteen specimens: Paramo de Mamarongo and Paramo de Chiriqua.

This interesting species is the representative of *O. guerinii* of the Eastern Andes, which it closely resembles in pattern of coloration. Both sexes have the outer rectrices (except terminally) white on both webs, while the throat-plumes of the males are deep blue instead of green. It was discovered by Simons in the Sierra Nevada in July, 1879, at altitudes ranging from 11,000 to 14,000 feet, and up to the present time has been known to science only by the specimens secured by that collector, Mr. Brown having failed to meet with it. It was found very sparingly in April, 1914, on the Paramo de Mamarongo from 10,000 feet upwards. Bushes and shrubbery are scarce on this paramo, hence the few birds found there. On the Paramo de Chiriqua it was more common, and was taken as low down as 12,000 feet, and thence up to 16,000 feet, being most abundant between 13,000 and 15,000 feet. It is therefore essentially a species belonging to the Paramo Zone. Almost invariably it alights on the flower from which it is feeding, hanging on by its strong feet, instead of hovering before it like most hummingbirds. It is very shy.

196. *Metallura districta* Bangs.

Metallura smaragdinicollis (not *Orthorhynchus smaragdinicollis* D'Orbigny and Lafresnaye) SALVIN and GODMAN, Ibis, 1879, 205 (Valley of Chinchicua; crit.).—VON BERLEPSCH, Journ. f. Orn., XXXV, 1887, 335 (Santa Marta [region], ex Salvin and Godman).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 154 (Chinchicua Valley).—SIMON, Cat. Fam. Trochilides, 1897, 32 (Santa Marta [region], in range).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 174 (Palomina and San Miguel).—HARTERT, Nov. Zoöl., VI, 1899, 73, in text ("Santa Marta"; crit.).—BANGS, Auk, XVI, 1899, 139, in text (Palomina and San Miguel; crit.).—DUBOIS, Syn. Avium, I, 1900, 156 (Santa Marta [region], in range; references).

Metallura districta BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 94 (Pueblo Viejo, La Concepción, San Miguel [type-locality], Paramo de Macotama, Macotama, and Paramo de Chiruqua; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—BANGS, Proc. New England Zoöl. Club, I, 1899, 76 (San Sebastian and Templado).—SHARPE, Hand-List Birds, II, 1900, 133 (ref. orig. descr.; range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 140 (El Libano and Valparaiso).—DUBOIS, Syn. Avium, II, 1903, 1067 (ref. orig. descr.; range).

Laticauda districta BRABOURNE and CHUBB, Birds S. Am., I, 1912, 138 (ref. orig. descr.; range).

Metallura smaragdinicollis districta CORY, Field Mus. Zoöl. Series, XIII, 1918, 271 (ref. orig. descr.; range).—SIMON, Cat. Fam. Trochilidæ, 1921, 202 (diag.), 381 (ref. orig. descr.; range).

Forty-one specimens: El Libano, Valparaiso, Cincinnati, San Lorenzo, Las Taguas, Cerro de Caracas, San Miguel, Sierra Nevada de Santa Marta (6,000 and 8,000 feet), and Heights of Chirua.

The first specimen of a *Metallura* collected in the Santa Marta region was referred by Salvin and Godman to *M. smaragdinicollis* with some misgiving. Mr. Bangs pointed out its distinctive characters in due course, and gave it a name as soon as he was sure that these were really constant. It is very closely related to *M. smaragdinicollis* of Bolivia and Peru, and might readily stand as a subspecies of that form, were it not for the fact that another and different bird, *M. tyrianthina*, occupies the intervening region. In the several races of this latter species the tail is bronzy or coppery, while in *M. districta* it is more purplish or violet. There is, however, considerable variation shown in the present series as regards the precise shade of color, in both sexes. Females vary also in the amount of green spotting on the under parts. No. 45,292, San Miguel, April 13 (sexed as a male but more probably a female, judging by the rufescent underparts), is a

partial albino, the wings, most of the tail, and some of the feathers of the back being white, the two former much worn.

The most abundant and generally distributed hummingbird of the higher altitudes of this region, to which it is strictly confined, ranging through the Subtropical and Temperate Zones. It is abundant on the open summit of the San Lorenzo as well as in the forest down to 5,500 feet, and occurs down as low as Cincinnati (4,500 feet). In the Sierra Nevada Mr. Brown reported it from Pueblo Viejo, but the writer did not meet with it so low as that. The lowest point was the Heights of Chirua at about 4,000 feet elevation, from which it ranges upward to the limit of the forest, probably about 11,000 feet. It is a very tame, rather sluggish little bird, and often hangs on by the feet to the flower from which it is feeding upon insects and nectar. It has a curious little song, often heard when the bird is at rest on a twig in the shrubbery.

197. **Ramphomicron dorsale** Salvin and Godman.

Ramphomicron dorsale SALVIN and GODMAN, Ibis, 1880, 172, pl. 5, figs. 1-2 (Sierra Nevada de Santa Marta; orig. descr.; type now in coll. Brit. Mus.; crit.; habits).—REICHENOW and SCHALOW, Journ. f. Orn., XXVIII, 1880, 317 (reprint orig. descr.).—SHARPE, in Gould's Mon. Trochilidæ, Supplement, 1883, pl. [43] and text (descr. and range, *ex* Salvin and Godman).—VON BERLEPSCH, Journ. f. Orn., XXXV, 1887, 336 (Santa Marta [region], *ex* Salvin and Godman).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 343 (Sierra Nevada de Santa Marta; descr.; references).—SIMON, Cat. Fam. Trochilides, 1897, 35 (Sierra Nevada de Santa Marta, in range).—SIMON, Feuille des Jeunes Naturalistes, (3), XXVIII, 1898, 44 (Sierra Nevada de Santa Marta, in range).—BANGS, Auk, XVI, 1899, 138 (Salvin and Godman's record).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 94 (Paramo de Chiriqua and La Concepción; plum.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 137 (Salvin and Godman's and Bangs' references).—DUBOIS, Syn. Avium, I, 1900, 158 (ref. orig. descr.; range).—CORY, Field Mus. Zool. Series, XIII, 1918, 275 (references; range).

Ramphomicron dorsale BOUCARD, Humming Bird, II, 1892, 75 (Sierra Nevada de Santa Marta, in range; ref. orig. descr.).—BOUCARD, Gen. Humming Birds, 1895, 86 (references; descr.; range).

Ramphomicrum dorsale HARTERT, Tierreich, Lief. 9, 1900, 171 (references; descr.; range).—SHARPE, Hand-List Birds, II, 1900, 134 (Sierra Nevada de Santa Marta, in range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 140 (ref. orig. descr.; range).

Ramphomicrus dorsalis SIMON, Cat. Fam. Trochilidæ, 1921, 199 (descr.), 380 (references; range).

This is one of the four interesting new species of hummingbirds discovered by Simons in the Sierra Nevada, and duly described by Salvin and Godman, who remark as follows: "Of this beautiful species Mr. Simons sends two specimens, marked male and female. Both are in perfect plumage. The female, first obtained, was found flitting about a small stream in a wood. The male was shot on the grassy slope of a hill far from bushes and trees." The female was taken at an elevation of 8,200 feet, the male at "2,000" feet, but this latter is clearly a slip for 12,000 feet. The species continued to be known from this pair alone until 1899, when Mr. Brown succeeded in securing four more specimens. "An adult female and two adult males were taken at Paramo de Chiruqua, at the edge of the snow, on March 25 and February 25, 1899, at an altitude of 15,000 feet. A young male taken at La Concepcion, February 16, 1899, at 3,000 feet, is much like the adult female, having a green back and spotted underparts; its tail, however, is like that of the adult male, except that the ends of the feathers are decidedly tipped with white." The upper parts in the male have been described as black; they are only so when seen in one position (held away from the light, the bill pointing toward the eye). In a sidelight they show changing reflections of dark bluish, greenish, and flame-color, and on the upper tail-coverts rich coppery. Below the gorget the ground-color is buffy cinnamon.

So little is known about the migration habits of this species that it is uncertain to which zone it really belongs. The available records indicate that it is a bird of the Temperate and Paramo Zones, but it is difficult to reconcile this alignment with the La Concepción record unless a local migration takes place at certain seasons.

198. **Florisuga mellivora** (Linnæus).

Mellisuga mellivora SALVIN and GODMAN, Ibis, 1880, 172 (Minca).

Florisuga mellivora SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 329 (Minca).—

BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—

ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 138 (Bonda and Cacagualito).

—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 576 (Santa Marta localities and references; meas.).

Additional records: Tucurinca (Carriker).

Twenty-four specimens: Don Diego, Don Amo, Minca, Cincinnati, La Tigrera, and Dibulla.

This species seems to be remarkably constant throughout its exten-

sive range. It is true that Mr. Ridgway (*Proceedings Biological Society of Washington*, XXIII, 1910, 55) has described the Tobago bird as distinct on account of its supposed larger size, but some of the Santa Marta specimens above listed are fully as large. Some individuals are more or less glossed with bronzy above, while others are plain dark green.

Another Tropical Zone hummingbird, fairly common from the edge of the foothills back of Santa Marta up to 5,000 feet at Cincinnati. Probably it goes up to the altitude of Cincinnati only to feed on the guamas, for at other times it is scarcely seen above 2,500 feet. It was common in the forested lowlands at Don Diego and Dibulla, on the north coast, and fairly common also at Loma Larga, in the eastern part, but less numerous on the west side of the Sierra Nevada, at Tucurínca. It is entirely a forest-dweller, and partial to the vicinity of water, always being seen near or over some small stream in the forest.

199. *Lafresnaya lafresnayi liriopae* Bangs.

Lafresnaya gayi (not *Trochilus gayi* Bourcier and Mulsant) SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 327 (San José).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 94 (Macotama, San Miguel, and Paramo de Chiriqua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 138 (Salvin and Bangs' references).

Lafresnaya liriopae BANGS, Proc. Biol. Soc. Washington, XXIII, 1910, 105 (Paramo de Chiriqua, 11,000 ft.; orig. descr.; type now in coll. Mus. Comp. Zool.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 131 (ref. orig. descr.; range).—CORY, Field Mus. Zool. Series, XIII, 1918, 249 (ref. orig. descr.; range).

Lafresnaya gayi liriopae SIMON, Cat. Fam. Trochilidae, 1921, 160 (descr.), 358 (references; range).

One specimen: San Miguel.

This individual is an immature male, as shown by the buffy upper throat, spangled with green. It agrees in other respects with the type and one other male specimen in the collection of Mr. Bangs, but the status of the form represented by these birds is open to question. It was described as intermediate between the two recognized species of the genus, having the straight bill and more bronzy central rectrices of *L. lafresnayi*, and the white outer rectrices of *L. saul*. Now, it so happens that the difference in the shape of the bill between these two species to which Mr. Bangs alludes simply does not exist, as shown by

examination of the ample series studied in this connection. The central rectrices average more bronzy, less greenish, in *L. lafresnayi* than in *L. saul*, but some specimens are practically indistinguishable in this respect. The color of the outer rectrices seems to vary through wide limits, too, as shown by a series of specimens in the collection of the Carnegie Museum from the State of Santander, Colombia. In some of these the outer rectrices are as white as in topotypical specimens of *L. saul* from Quito, Ecuador, while in others they are rich buffy white, comparing favorably with Bogotá skins of *L. lafresnayi*. In short, all the characters serving to separate these two forms are so evidently unstable that the forms in question can scarcely be regarded as more than conspecies. Clearly, therefore, a form resting on a combination of these characters is open to suspicion. As a matter of fact, the only character by which *liriope* may be recognized is the deeper, more coppery bronze tinge of the central rectrices, and even this might fail in a larger series.

Simons took a single example of this hummingbird at San José, in the Sierra Nevada, while Mr. Brown obtained three, at altitudes ranging from 7,500 to 11,000 feet. Although the writer was continually on the watch for it he secured only the one specimen, shot at San Miguel in March, feeding from the blossoms of a tree near the river. From the known records it is fair to assign the species to the Subtropical Zone, ranging upward to the Temperate Zone, or from about 5,000 to 11,000 feet.

200. *Helianthea phalerata* (Bangs).

Leucuria phalerata BANGS, Proc. Biol. Soc. Washington, XII, 1898, 174 ("Macotama"; orig. descr.; type now in coll. Mus. Comp. Zoöl.; meas.).—BANGS, Auk, XVI, 1899, 138, pl. 2 ("Macotama"; habits).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 93 (Paramo de Macotama; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 139, 184 (El Libano; plum.; crit.).—SIMON, Cat. Fam. Trochilidæ, 1921, 165 (descr.), 358 (references; range).

Helianthea sp. ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 139 (El Libano).

Helianthea phalerata HARTERT, Tierreich, Lief. 9, 1900, 131 (references; descr.; range).—SHARPE, Hand-List Birds, II, 1900, 126 (Sierra [Nevada] de Santa Marta, in range).—DUBOIS, Syn. Avium, II, 1903, 1067 (ref. orig. descr.; range).—HELLMAYR, Bull. Brit. Orn. Club, XIX, 1906, 29 (crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 128 (ref. orig. descr.; range).—CORY, Field Mus. Zoöl. Series, XIII, 1918, 243 (references; range).

Thirty-nine specimens: El Libano, Cincinnati, San Lorenzo, Sierra Nevada de Santa Marta (6,000 feet) San Miguel, Cerro de Caracas, and Heights of Chirua.

A very distinct, isolated species, but scarcely entitled to generic separation from *Helianthea*. Fully adult males appear to have the tail wholly pure white, like the type, but many of the specimens of our series have the feathers more or less shaded and tipped with bronzy—markedly in some cases, as for instance in No. 38,626, in which the middle rectrices are more than half of this color. This condition is accompanied by the presence of cinnamon-tipped feathers on the abdomen—clearly indicative of immaturity. Two such specimens (Nos. 38,004 and 44,890) also lack the glittering crown, the feathers being dark green like the rest of the upper parts. This is clearly an individual variation, and is precisely analogous to the case of a specimen of *H. helianthea* in the series now before us. The young male, illustrated by No. 45,140 (March 30), is like the adult female, but with a few green feathers coming in below, and indications of the glittering crown. Young females are duller cinnamon below than the adults, with more dusky spotting.

This beautiful bird is one of the interesting discoveries made by Mr. Brown in the Sierra Nevada. His first specimen, from which Mr. Bangs described the species, was taken at San Miguel, instead of Macotama, as erroneously given on the label, under the following circumstances: "After a difficult march through the forest, the way barred by swollen torrents and fallen trees, I arrived at the Argoneous town of San Miguel. Here hummingbirds of many species were seen, and on that day [June 17] I collected the only specimen of this beautiful white-tailed species that I have seen in these mountains. I first detected it hovering above an orchid. Its flight was rapid and strong, and it uttered a twittering note as it darted from flower to flower in search of its food, its gorgeous plumage shining in the morning sun. As I only watched this little gem a few minutes before shooting it, I detected nothing in its habits to distinguish it from the numerous other hummingbirds that were about me." Later Mr. Brown secured another male at an altitude of 11,000 feet on the Paramo de Macotama. Mr. Smith traced it to the San Lorenzo, securing nine specimens at El Libano (6,000 feet), including three females, which were duly described by Dr. Allen. According to the writer's experience the species

is not abundant on the San Lorenzo, where it occurs as a bird of the Subtropical Zone, between 5,000 and 8,000 feet, in the virgin forest only, almost always keeping high up in the trees. It was more common at San Miguel and the Cerro de Caracas, at the former place occurring out in the open, feeding from the flowers of the banana-plant. At the latter locality it was found in the forest or along its edge, between 9,000 and 11,000 feet. On no occasion was it seen above 11,000 feet, and it is rare above 10,000 feet. It is very swift on the wing, darting about with dazzling quickness, and hovering but an instant over a flower. It is very fond of feeding from the blossoms of the bromeliás, which grow so abundantly on all the trees from about 3,000 feet upwards.

201. *Chlorostilbon russatus* (Salvin and Godman).

Panychlora sp. SALVIN and GODMAN, Ibis, 1879, 205 (Manaure; crit.); 1880, 174 (San Sebastian and Manaure).

Panychlora russata SALVIN and GODMAN, Ibis, 1881, 597 (Manaure, San Sebastian, and San José; orig. descr.; type now in coll. Brit. Mus.; crit.).—REICHENOW and SCHALOW, Journ. f. Orn., XXX, 1882, 216 (reprint orig. descr.).—SHARPE, in Gould's Mon. Trochilidæ, Supplement, 1883, pl. [58] and text (descr.; range, etc., *ex* Salvin and Godman).—VON BERLEPSCH, Journ. f. Orn. XXXV, 1887, 336 (Santa Marta [region], *ex* Salvin and Godman).—BOUCARD, Humming Bird, II, 1892, 80. (Santa Marta [region], in range; ref. orig. descr.).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 71 (Manaure, San José, San Sebastian, and Atanquez; descr.; references).—BOUCARD, Gen. Humming Birds, 1895, 131 (references; descr.; range).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 174 (San Miguel and Palomina).—BANGS, Auk, XVI, 1899, 138 (San Miguel, Palomina, and "Santa Marta"; Salvin and Godman's record).—BANGS, Proc. New England Zool. Club, I, 1899, 76 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 141 (Bonda).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 120 (ref. orig. descr.; range).—SIMON, Cat. Fam. Trochilidæ, 1921, 59 (descr.), 288 (references; range).

Chlorostilbon russatus SIMON, Cat. Fam. Trochilides, 1897, 18 (range).—DUBOIS, Syn. Avium, I, 1900, 142 (range; references).—HARTERT, Tierreich, Lief. 9, 1900, 78 (references; descr.; range).—SHARPE, Hand-List Birds, II, 1900, 114 (range).—CORY, Field Mus. Zool. Series, XIII, 1918, 207 (references; range).

Additional records: San Francisco, La Concepción, San Antonio (Brown).

Eleven specimens: Cincinnati, Minca, Pueblo Viejo, and San Miguel.

A very distinct species, readily distinguished from its congeners by

the rich coppery or bronzy gloss of the tail and wing-coverts, more or less obvious in adults of both sexes. It was discovered by Simons at Manaure, near the foot of the Eastern Andes, and encountered later at various points on the southern slope of the Sierra Nevada. Mr. Brown found it on the north slope also, as well as in the foothills back of Santa Marta, while Mr. Smith sent in two specimens labelled as coming from Bonda. According to the experience of the writer it seems to range over the whole of the region between 2,000 and 5,000 feet, straggling a little lower down in the foothills back of Santa Marta. It is not common anywhere, however, and frequents shrubbery along roadsides, the edges of woodland, etc.

202. *Chlorostilbon haeberlinii* (Reichenbach).

Chlorostilbon haeberlinii ELLIOT, Ibis, 1875, 160 ("Santa Marta").—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 53 ("Santa Marta").—SIMON, Cat. Fam. Trochilides, 1897, 17 ("Santa Marta," in range).—SIMON, Feuille des Jeunes Naturalistes, (3), XXVII, 1897, 144 ("Santa Marta," in range).—HARTERT, Tierreich, Lief. 9, 1900, 75 ("Santa Marta," in range).—SHARPE, Hand-List Birds, II, 1900, 113 ("Santa Marta," in range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 141 (Bonda).—DUBOIS, Syn. Avium, I, 1900, 141 ("Santa Marta," in range; syn.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 290 (Bonda suggested as type-locality).

Chlorostilbon sp. SALVIN and GODMAN, Ibis, 1880, 174 (Valencia).

Chlorostilbon atala (not *Ornismya atala* Lesson) SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 55 (Valencia).

(?) *Chlorostilbon chrysogaster* BOUCARD, Humming Bird, II, 1892, 79 ("Santa Marta").—BOUCARD, Gen. Humming Birds, 1893, 121 ("Santa Marta").—SIMON, Cat. Fam. Trochilidæ, 1921, 292 ("Santa Marta"; crit.).

Five specimens: Mamatoco and Fonseca.

The two adult males from Bonda sent in by Mr. Smith are apparently correctly identified. The Mamatoco skins, both females, are referred here provisionally, mainly on geographical grounds. The true home of the present species is the lower Magdalena Valley, the Santa Marta region being on the edge of its range. Dr. Chapman has recently proposed to substitute Bonda as the type-locality, but Reichenbach distinctly gives Carthagena as such. Carthagena is also the assigned type-locality for *Trochilus chrysogaster* Bourcier (*Revue Zoologique*, 1843, 101), which has been synonymized with *Chlorostilbon gibsoni*, apparently on the strength of Gould's and Salvin's statements that they had compared Bourcier's type (now in the British Museum col-

lection), and found it absolutely identical with the type of *C. angustipennis* (= *gibsoni*). We now know, however, that *C. gibsoni* comes from another part of Colombia, and that the only form of this group occurring in the lower Magdalena Valley is *C. haeberlinii*. It follows either that Bourcier's supposed type has been misidentified, or that it did not come from Carthagená. Boucard, indeed, distinctly says that the type in question is in his collection, and that it came from Santa Marta! If he is correct, then *chrysogaster* would become the proper specific appellation for the species now known as *C. haeberlinii*. It thus is desirable to determine which of these two specimens has the better claim to be the actual type of Bourcier's description.

Since the above was written M. Simon has gone into this case also, and we venture to give a translation of his remarks: "Bourcier's description leaves a little doubt because of his statement 'bill of a brownish-black,' but the rest corresponds to the bird most often designated under the name *C. haeberlini* Reichenbach; the indication of Carthagená conforms to the habitat of this species to the exclusion of any other. The bird in the Boucard collection, labeled '*C. chrysogaster* de Sta Martha, Nouvelle Grenade, 1853, type de Bourcier,' is certainly not the type of Bourcier described in 1843, but it has perhaps been determined by him in the old collection of Riocourt. In the British Museum another supposed type of *T. chrysogaster* Bourc. is, according to Salvin, *C. gibsoni*."

The several individuals of this species above recorded were shot in scrubby woodlands at Mamatoco and Fonseca. It was common also at Valencia, in open spots in the forest. A female taken at this latter locality by Simons has been referred to *C. "atala"* (= *caribæus*) by Salvin, but inasmuch as it is *C. haeberlinii* which occurs at Fonseca, farther northeast, we feel safe in referring this record to the present species.

203. *Chlorostilbon caribæus* Lawrence.

Three specimens: Rio Hacha.

This is one of the species of the arid coast district of northern Venezuela, reaching the Santa Marta region in the extreme northeastern part, at Rio Hacha, where the same conditions obtain. The three specimens (all males) agree with a series from Curaçao in small size and shape of the tail, but the bill (in the skin) is pale underneath, almost as in *C. haeberlinii*.

These three individuals were taken in the scrub-growth around Rio Hacha. Unlike most of the characteristic birds of this arid section, the species does not appear to range into the valley of the Rio Rancheria, at least to any great extent.

204. *Lepidopyga lilliae* Stone.

(?) *Sapphironia caruleogularis* (not *Trochilus caruleogularis* Gould, 1850) GOULD, Mon. Trochilidæ, V, 1860, text to pl. 346 ("Santa Marta").—WYATT, Ibis, 1871, 378 (Cienaga).

(?) *Lepidopyga caruleogularis* RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 539 (Cienaga, in range, *ex* Wyatt).

Lepidopyga lilliae STONE, Proc. Acad. Nat. Sci. Philadelphia, 1917, 204 (Punto Caiman; orig. descr.; type in coll. Acad. Nat. Sci. Philadelphia).—CORY, Field Mus. Zool. Series, XIII, 1918, 181 (ref. orig. descr.; range).

Sapphironia caruleigularis duchassaingi (not *Trochilus duchassaingi* Bourcier) SIMON, Cat. Fam. Trochilidæ, 1921, 299 (crit.).

Two specimens: Punto Caiman.

Two male hummingbirds collected by the junior author in the mangroves at Punto Caiman on September 27 and 29, 1913, and sent to the Academy of Natural Sciences of Philadelphia, proved to belong to a very distinct species, and were accordingly described by Dr. Stone under the above name, given in honor of his wife. They differ from authentic specimens of *L. caruleogularis* in having the entire under parts (except the under tail-coverts) glittering blue, and seem to be specifically distinct. It is probable that the examples of supposed *caruleogularis* to which Gould refers as having been received by Verreaux "in tolerable abundance from Santa Martha" were really of the present form (it does not appear that Gould ever saw these birds himself). Very likely, too, Wyatt's record from Cienaga pertains to the same form, since there is absolutely no satisfactory evidence going to show that *L. caruleogularis* ranges beyond the lower Atrato Valley in Colombia. The known range of *L. lilliae* is thus restricted to the vicinity of the Cienaga Grande, east of the Magdalena River.

Lepidopyga caruleogularis (Gould).

Thalurania [sic] *calina* BOURCIER, Rev. et Mag. Zool., (2), VIII, 1856, 553 ("Santa Marta"; orig. descr.; type in coll. —?).

Thalurania calina GIEBEL, Thes. Orn., III, 1877, 616 (syn.; ref. orig. descr.).

Sapphironia calina SIMON, Cat. Fam. Trochilidæ, 1921, 299, part (ref. orig. descr.).

Bourcier's name above cited was based on a supposed Santa Marta specimen. Unfortunately its present whereabouts are unknown, but Gould must have handled it at one time, since he says "I have not placed the *Trochilus Duchassaingii* and *Thalurania Calina* among the synonyms of the present species without due consideration and a careful comparison of the typical specimens one with the other. . . . The specific name *Calina* not having been given till a year later than my own of *caruleogularis*, it must give place to that term; besides which, the bird is not a *Thalurania*."

Following Gould, the name has been considered as a synonym of *L. caruleogularis* by all authors up to 1909, when M. Simon (*Revue Française d'Ornithologie*, I, 1909, 66) sought to transfer it to the species described by Lawrence under the name *Sapphironia luminosa* (*Annals Lyceum Natural History New York*, VII, 1862, 458), intimating that the difference indicated in the respective descriptions was probably due to age. Although M. Simon's determination has been followed by such authorities as Mr. Ridgway, Messrs. Brabourne and Chubb, and Dr. Chapman, we can in nowise indorse it. With a good series of both the blue-throated and the green-throated species available for study, it is inconceivable that Bourcier's description, "Gorge, devant du cou, thorax d'un beau bleu brillant, verdissant sur les côtés du cou. Abdomen vert bronzé" could apply to anything but the former. M. Simon, indeed, brings forward no new evidence in support of his position, and in the absence of any valid proof to the contrary we believe that Gould's statement should be accepted at its face value. The only difficulty in so doing arises from the fact that Bourcier assigns the vicinity of Santa Marta as the type-locality of his new species *calina*, whereas we now know that the region in question is inhabited by a form in which not only the throat, but also the entire under parts are glittering blue. Bourcier's description being so explicit, so obviously applicable to an adult bird, and so fully confirmed by Gould, we have a right to conclude that his type could not possibly have come from Santa Marta as he believed. Since we know that sundry other species ascribed to Santa Marta by various authors really came from Panama instead, this difficulty is not insuperable.

205. *Lepidopyga luminosa* (Lawrence).

Six specimens: Fundación and Fonseca.

In accordance with the foregoing considerations, we are obliged to restore Lawrence's name, based on a specimen from Barranquilla, Colombia, to the form with wholly green under parts. For a long time the species appears to have been known only from the type, and even as late as 1909 only three additional specimens had come to light, according to M. Simon. As a result Lawrence's name was quoted doubtfully, or sometimes as a synonym. The species appears from recent researches, however, to be a common resident in the Caribbean

coast region of Colombia, extending up the Magdalena Valley as far at least as Aguachica, and westward to the Atrato. Fundación, where four male specimens were taken in open woodland, is apparently well within the limit of its range, and brings it into the present list. More recently it has been traced into the Rio Rancheria-Rio Cesar Valley, having been detected at Valencia and Fonseca in the summer of 1920.

206. *Thalurania colombica colombica* (Bourcier).

Thalurania columbica SALVIN and GODMAN, Ibis, 1880, 172 (Minca and San José).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 79 (Minca, San José, Pueblo Viejo, and Chinchicua Valley).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta"), 174 (San Miguel and Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 141 (Bonda, Onaca, Minca, Cacagualito, Las Nubes, Valparaiso, and El Libano).—SIMON, Cat. Fam. Trochilidæ, 1921, 306 ("Sierra Nevada de Santa Marta," in range).

Thalurania colombica colombica RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 532 (Santa Marta localities and references; meas.).

Additional records: Chirua, San Francisco, La Concepción (Brown).

Thirty-nine specimens: Las Nubes, Onaca, Don Amo, Valparaiso, Cincinnati, Las Taguas, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, and Don Diego.

Immature males, distinguished by their green crowns and dusky and greenish abdomens, with little or no blue, are dated variously from April 10 to July 27. These are in first nuptial dress.

This well-known species is widely distributed within its range, and is moreover one of the most abundant of the hummingbirds with which the writer is acquainted. Its normal range appears to lie wholly in the Subtropical Zone, but it is continually straggling downwards in search of food wherever the forest descends to lower levels. Mr. Smith got two at Bonda, while the writer took one at Don Diego, practically at sea-level. It is found only in the forest or heavier woodland, and keeps well up in the trees as a rule, although occasionally feeding from some flower in the undergrowth. It is very pugnacious, driving other species away from a favorite tree with the greatest animosity. Perhaps this very trait is one of the reasons for its relative abundance.

A nest received from Mr. Smith, labeled Onaca, December 19, is of the usual hummingbird type, saddled on the fork of a small branch, and composed of fine plant down, the outside partly covered with lichens. The eggs measure 13.5×10 .

207. *Damophila juliae juliae* (Bourcier).

Eighteen specimens: Cincinnati and Fundación.

There is considerable variation in the amount of bronzy or coppery sheen on the upper tail-coverts and upper parts generally. Two males in transition dress are included (August 9 and 13).

A single male was taken in the coffee-plantations at Cincinnati (4,500 feet), but no others were ever seen there. At Fundación it was the most abundant of the family in August, being found in the forest. It is a Tropical Zone form, evidently ranging in this region over the alluvial plain around the Cienaga Grande and into the Magdalena basin.

208. *Colibri delphinae* (Lesson).

Petasophora delphinae SALVIN and GODMAN, Ibis, 1880, 173 (Minca).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 111 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 140 (Bonda).

Colibri delphinae RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 486 (Santa Marta localities and references).

Twenty-two specimens: Bonda, Cincinnati, Dibulla, and Heights of Chirua.

Although this species appears to be subject to considerable variation of an individual character, as well as that due to age, there do not seem to be any essential differences between specimens from extremes in its range, dark and pale birds occurring indifferently anywhere. The guttural spot varies considerably in size and color, but is present in all specimens examined. Individuals with buffy lores are probably immature.

This hummingbird ranges through the Tropical into the lower Subtropical Zone in this region. The only place where it has ever been observed in any numbers is the hacienda Cincinnati, where it is always abundant during the blossoming season of the guamas. It was fairly common at Dibulla also, feeding among the flowers of a tree used for shade in the cacao-plantations. It is evidently a dweller in the forest under natural conditions. It is one of the few hummingbirds which has a sort of weak little song, often repeated while the bird rests in the shade of the guamas.

209. *Colibri cyanotus cyanotus* (Bourcier and Mulsant).

Petasophora cyanotis SALVIN and GODMAN, Ibis, 1880, 173 (Minca and San Sebastian).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 110 (Minca and San Sebastian).—BANGS, Proc. New England Zool. Club, I, 1899, 76 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 140 (Valparaiso and El Libano).

Colibri cyanotus HARTERT, Tierreich, Lief. 9, 1900, 94 (Sierra Nevada de Santa Marta, in range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 484 (Santa Marta localities and references).

Eight specimens: Cincinnati and San Lorenzo.

Caracas, Venezuela, is the type-locality of this form, so that specimens from the coast region of Venezuela may therefore be considered typical; they agree essentially with a series from the State of Santander, Colombia. Eliminating the females and young birds, and comparing adult males alone, it appears that Costa Rican birds differ in having the under parts markedly brighter, more bluish, less yellowish green, with frequently a decided dark blue area on the middle of the breast. These differences, to which Mr. Bangs has called attention (*Proceedings New England Zoölogical Club*, III, 1902, 30) in the case of Panama specimens, have been discounted both by Mr. Ridgway and more recently by Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 294), but they are certainly far too prominent and constant in the series examined to be ignored. Santa Marta specimens prove to be distinctly intermediate between this northern form (for which we accept the name *cabanidis* Heine) and typical *cyanotus*, although perhaps nearer the latter. The under tail-coverts are more or less edged with pale buffy in all these examples, while in a young bird (No. 38,001, Cincinnati, August 4) the buffy margins are very broad.

This is not a rare bird on the San Lorenzo in the heavy forest of the Subtropical Zone, between 5,000 and 7,000 feet, rarely coming out into the coffee-plantations. It has been taken on the south slope of the Sierra Nevada by Simons, and also by Mr. Brown, but there are no records for the north slope. The first-named collector took it as low down as Minca, but this must be an exceptional case.

210. *Colibri iolotus brevipennis* Cory.

Petasophora anais (not *Ornismya anais* Lesson) SALVIN and GODMAN, Ibis, 1880, 173 (San Sebastian and Sierra Nevada de Santa Marta).

Petasophora iolata (not of Gould) SALVIN, Cat. Birds Brit. Mus., XVI, 1892,

107 (San Sebastian and Sierra Nevada de Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 173 (Macotama and San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 76 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 140 (Salvin and Godman's and Bangs' references).

Here as elsewhere throughout its extensive Andean range this fine large hummingbird appears to inhabit the Subtropical Zone, reaching up to the Temperate Zone at certain points. Simons took many specimens at San Sebastian (6,700 feet), and some in the Sierra Nevada as high as 10,000 feet. Mr. Brown secured it at Macotama and San Miguel, and sent back no less than one hundred and thirty-eight specimens from San Sebastian and El Mamon, on the south slope of the Sierra Nevada—a circumstance sufficiently attesting its abundance there. Notwithstanding, Mr. Carriker's collections do not contain a single example of this species, for which fact it is hard to account. He writes that a single individual was once seen between Macotama and Taquina, feeding on the flowers of the sisal plant, out in the open. It was exceedingly shy, and was shot at twice, but finally escaped entirely. He has recently (November, 1920) encountered the species on the summit of the San Lorenzo, associated with other Subtropical Zone hummingbirds, about a large tree which was in flower at the time.

211. *Anthracothorax nigricollis nigricollis* (Vieillot).

Lampornis violicauda (not *Trochilus violicauda* Boddaert) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 141 (Bonda, Cacagualito, and Masinga). *Anthracothorax nigricollis nigricollis* RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 459 (Santa Marta localities and references).

Nine specimens: Bonda, Don Amo, Cincinnati, and Fundación.

This wide-ranging South American hummingbird is probably only a straggler as high up as Cincinnati, its regular range being in the Tropical Zone lowlands and lower foothills of the north and west sides of the San Lorenzo, there being no record for the Sierra Nevada proper. It is partial to the more open woodland rather than the deep forest.

212. *Saucerottia saucerottei warszewiczi* (Cabanis and Heine).

Saucerottia warszewiczi SALVIN and GODMAN, Ibis, 1880, 173 (Santa Marta, Minca, and Valencia). *Pyrhophæna warszewiczi* VON BERLEPSCH, Journ. f. Orn., XXXV, 1887, 336 (Santa Marta [ex Salvin and Godman]).

- Saucerotia sophia* (not *Trochilus sophia* Bourcier and Mulsant) BOUCARD, Humming Bird, II, 1892, 81 (Santa Marta, in range).
- Amazilia warszewiezi* SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 222 (Santa Marta, Minca, Atanquez, Manaure, Valencia, and Sierra Nevada de Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—BANGS, Proc. New England Zool. Club, I, 1899, 78 (San Sebastian).
- Amizillis warszewiezi* ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 139 (Bonda, Minca, and Cacagualito).
- Saucerottea warszewiezi* (*typica*) HARTERT, Tierreich, Lief. 9, 1900, 52 (Santa Marta, in range).
- Saucerottia saucerottei warszewiezi* HELLMAYR, Nov. Zööl., XX, 1913, 251 (Santa Marta region, in range).—CORY, Field Mus. Zööl. Series, XIII, 1918, 183 (Santa Marta region, in range).
- Saucerrotea mellisuga warszewiezi* SIMON, Cat. Fam. Trochilidæ, 1921, 333 ("Santa Marta").

Thirty-two specimens: Bonda, Don Amo, Cincinnati, Agua Dulce, Mamatoco, La Tigra, Fundación, and Dibulla.

Females of this form have the under tail-coverts grayish, glossed with blue, approaching thus typical *saucerottei* from western Colombia. No. 38,807, Mamatoco, April 25, a young bird, has the posterior under parts buffy, and the feathers of the lower back tipped with the same color; otherwise it resembles the female.

Mr. Hellmayr has suggested that *Trochilus caligatus* Gould (*Proceedings Zoölogical Society of London*, 1848, 14) may be an earlier name for this form. It is true that in the original description nothing is said about the color of the lower back in particular, but later (*Monograph of the Trochilidæ*, V, 1861, text to pl. 322) Gould himself says that he could find no difference between his type-specimen, the type-specimen of *Trochilus sophia* Bourcier and Mulsant, and an authentic skin of *Hemithylaca hoffmanni* Cabanis and Heine. Since the alleged type of *Trochilus sophia* is known to belong to the Central American race Gould's statement is perfectly consistent with the facts in the case. As Gould at the same time recognized *warszewiezi* as distinct from the form in question it is scarcely probable that he would have misidentified his type of *caligatus*. It is true that the measurements he gives do not agree with those for either the Costa Rican or north Colombian bird, also that the alleged locality ("New Grenada") raises a further question, but the chances are that the name *caligatus* belongs to the Central American race at present known as *hoffmanni*.

The examination of the type-specimen, if extant, would readily settle the matter. It is a curious fact that in the *Tierreich* and the *Catalogue of the Birds in the British Museum* the name *Trochilus caligatus* appears in the synonymy of both "*Amazilia*" (*Saucerrottia*) *sophiæ* and "*Spathura*" (*Ocreatus*) *underwoodi*.

The most common species of the family in the lowlands and foothills back of Santa Marta. Its local distribution is rather puzzling, but probably its occurrence anywhere above 2,000 feet may be attributed to an altitudinal migration in search of food, as it appears there only during the season when the guama is in flower. It is resident all the year round in the lowlands and foothills of the San Lorenzo and Horqueta, but it has not been recorded from any point on the north slope of the Sierra Nevada proper, although there are several records from the south slope. It was not very abundant at Don Diego or Dibulla, and was not seen at all after the coast was left behind. Simons took it at Valencia, and the writer has lately met with it at the same place, as well as at Fonseca and Loma Larga.

213. *Amazilia tzacatl tzacatl* (De la Llave).

Amazilia fuscicaudata BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—HARTERT, *Tierreich*, Lief. 9, 1900, 58 ("Andes of Santa Marta," in range).

Amizillis fuscicaudata ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 139 (Bonda and Cacagualito).

Amizillis sp. ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 139 (Bonda).

Amizillis tzacatl tzacatl RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 408 (Santa Marta references and localities).

Amazilis tzacatl SIMON, Cat. Fam. Trochilidæ, 1921, 323 ("Santa Marta," in range).

Nineteen specimens: Bonda, Buritaca, Don Amo, Don Diego, Fundación, Mamatoco, Dibulla, and Fonseca.

Santa Marta specimens of this well-known hummingbird are precisely like others from Central America. There is much variation, apparently merely individual, in the amount of bronzy tinge on the upper parts. Females average duller than males, but the dark-colored maxilla is not characteristic of the female sex, as stated by some authors.

A species which in this region is strictly confined to the lowlands of the Tropical Zone on both sides of the Sierra Nevada, being most

abundant in the more humid portions. Open woodland and shrubbery are its favorite haunts, instead of the heavy forest.

214. *Leucippus fallax fallax* (Bourcier and Mulsant).

Doleromyia fallax VON BERLEPSCH, Journ. f. Orn., XXXV, 1887, 335 ("Santa Marta").—BOUCARD, Humming Bird, II, 1892, 83 ("Santa Marta," in range).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 177 ("northern Colombia").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 140 (Salvin's record; crit.).

Five specimens: Rio Hacha.

This plainly colored hummingbird is a littoral form, invading the Santa Marta region from Venezuela. The exact locality where Simons took his specimens is not stated, but was probably some point at the foot of the south slope of the Sierra Nevada. It is not uncommon at Rio Hacha in the thorny scrub, and is doubtless confined in this region to the Goajira Peninsula and the drier portions of the country south of the Sierra Nevada.

215. *Chalybura buffonii æneicauda* Lawrence.

Chalybura buffonii (not *Trochilus buffonii* Lesson) SALVIN and GODMAN, Ibis, 1879, 205 (Manaure); 1880, 171 (Minca).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 388 (Santa Marta localities and references; crit.).

Hyphuroptila buffoni SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 87 (Minca and Manaure).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 141 (Bonda, Minca, Jordan, Cacagualito, and Valparaiso).

Chalybura buffonii æneicauda HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 140 ("Santa Marta"; crit.).—SIMON, Cat. Fam. Trochilidæ, 1921, 341 (Salvin and Godman's record).

Twenty-four specimens: Bonda, Don Amo, Don Diego, Cacagualito, Cincinnati, Mamatoco, La Tigrera, Minca, and Dibulla.

Messrs. Hellmayr and von Seilern have shown that the *Trochilus buffonii* of Lesson was based on the Bogotá form, in which the tail is wholly bluish black. The bird from the coast region of Venezuela and Colombia, in which the middle rectrices are glossed with dark green or bronzy, they recognize as subspecifically distinct under the name *æneicauda*. With this conclusion we agree, after examining, in addition to the above, an ample series from Venezuela, although there is, to be sure, considerable individual variation. Although Mr. Ridgway intimates that Santa Marta examples differ from those from Vene-

zuela, and while it is true that in the former the middle rectrices average more greenish, and in the latter more bronzy, so many specimens are indistinguishable that there does not seem to be sufficient ground for their separation.

A common bird in the more humid lowlands of the north coast, as well as in the foothills back of Santa Marta, going up to 4,500 feet at least. It was noted at Loma Larga on the east side, but was not observed anywhere in the lowlands on the southwest side of the Sierra Nevada. Around La Tigrera and Don Diego it was particularly abundant. It always keeps low down in the forest, and is very partial to the flowers of the wild plantain as a source of food.

216. *Hylocharis cyanus viridiventris* von Berlepsch.

Hylocharis cyanea (not *Trochilus cyanus* Vieillot) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 138 (Bonda, Cacagualito, and Jordan).

Additional records: Las Vegas (Carriker).

Twenty-six specimens: Buritaca, Don Amo, Dibulla, Don Diego, and Loma Larga.

A very distinct subspecies, described originally from Venezuela, which appears to have entered the Santa Marta region from the north-east, and is unknown in any other part of Colombia. It is the most abundant hummingbird at Don Diego and Dibulla, but is confined strictly to the forest and the shade-trees on the cacao plantations. It is a rare bird so far west as Santa Marta, but there are a few specimens collected in that vicinity by Messrs. Brown and Smith.

217. *Campylopterus phainopeplus* Salvin and Godman.

Campylopterus phainopeplus SALVIN and GODMAN, Ibis, 1879, 202 (San José [type-locality], Atanquez, San Sebastian, San Miguel, and Sierra Nevada up to 15,000 ft.; orig. descr.; type now in coll. Brit. Mus.; range, habits, ex Simon).—REICHENOW and SCHALOW, Journ. f. Orn., XXVII, 1879, 429 (reprint orig. descr.).—SALVIN and GODMAN, Ibis, 1880, 171, pl. 4, fig. 1 (San Sebastian).—D'HAMONVILLE, Bull. Soc. Zoöl. France, VIII, 1883, 78 (descr.; crit.).—SHARPE, in Gould's Mon. Trochilidæ, Supplement, 1883, pl. [3] and text (descr., habits, etc., ex Salvin and Godman).—VON BERLEPSCH, Journ. f. Orn., XXXV, 1887, 316, footnote, and 335 ("Santa Marta").—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 294 (Atanquez, San José, and San Sebastian; descr.; references).—SIMON, Cat. Fam. Trochilides, 1897, 8 (Sierra Nevada de Santa Marta, in range).—SIMON, Feuille des Jeunes Naturalistes, (3), XXVII, 1897, 88 (Sierra Nevada de Santa

Marta, in range).—BANGS, Auk, XVI, 1899, 138 (Salvin and Godman's record).—DUBOIS, Syn. Avium, I, 1900, 134 (ref. orig. descr.; range).—HARTERT, Tierreich, Lief. 9, 1900, 33 (references; descr.; range).—SHARPE, Hand-List Birds, II, 1900, 102 (Santa Marta [region], in range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 138 (Salvin and Godman's references).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 110 (ref. orig. descr.; range).—CORY, Field Mus. Zoöl. Series, XIII, 1918, 168 (references; range),

Sapiopterus phainopeplus BOUCARD, Humming Bird, II, 1892, 86 (Sierra Nevada de Santa Marta, in range; ref. orig. descr.).—BOUCARD, Gen. Humming Birds, 1895, 358 (ref. orig. descr.; descr.; range).—SIMON, Cat. Fam. Trochilidæ, 1921, 32 (descr.), 267 (references; range).

This beautiful large hummingbird is one of those which is peculiar to the Santa Marta region, where during the spring months it inhabits that part of the Subtropical Zone lying on the south slope of the Sierra Nevada, but apparently ranges higher up at other times. Simons appears to be the only observer who has met with it, and it is known only from the specimens collected by him, most of which are now deposited in the British Museum, the only examples in this country being a fine male in the collection of the American Museum of Natural History and another specimen in the Field Museum of Natural History. It was described in 1879 by Salvin and Godman, from whose account we quote as follows:

"Of this beautiful species Mr. Simons has sent several specimens, all but one of them shot, unfortunately, a little before their plumage had become complete, the wing-feathers being still not fully grown. He has since sent us the following note concerning it:

"During an eight months' sojourn in the Sierra Nevada de Santa Marta, I had frequent opportunities of observing this interesting and brilliant Humming-bird, which I believe is migratory, spending the months of February, March, April, and May in the banana-plantations of the Lower Nevada, from 4000 to 6000 feet above the sea-level. From June to October I found it in the more elevated regions up to nearly the snow-line, or 15,000 feet above the sea-level. While exploring a mountain-gorge near Atanques (4000 ft.) I obtained my first specimen, in March. It was resting on a bent twig in the shade of a banana-leaf, and appeared very tame, allowing me to retire some distance before firing. The species was unknown to most of the inhabitants of Atanques, and excited much admiration from its beauty. A few days afterwards I had the pleasure of meeting with it again among

the banana-groves of San José. These plantations of the Indians are very extensive along the banks of the Guatapuri, at an elevation of 6000 feet, and are the highest banana-cultivation in the Nevada. This Humming-bird is pretty common here, but solitary; and I seldom saw more than three or, at the most, four in an afternoon. It betrays its presence, not only by the well-known *bur-rr* of the wings, but also by a sharp double note uttered as it flits from flower to flower. Alighting suddenly on a branch in the shade, it will remain minute after minute without the slightest movement. On these occasions I used to watch them carefully, but never could see them fly away, they disappeared as they came, like phantoms.

“Visiting San Sebastian in June, I was surprised to find the same little beauty, identical in plumage but with totally different habits. Instead of shunning the sun, as among the bananas, it establishes itself on the topmost twig of some dead branch or scantily clothed tree, and passes the day filling the air with its loud plaintive note in answer to its mate. Every now and then, as a sort of exercise, it would shoot up into the air like a rocket, sound a very pretty *twit-twit*, turn a few somersaults, and descend gracefully with tail-feathers spread out like a fan. These aerial movements are excessively beautiful, and always resorted to, even if the bird is disturbed. In this latter case it does not return to its accustomed perch, but seeks another tree close by, where it sings on merrily till all danger is past; it always, however, returns to its old haunt. I watched one for a fortnight, and it never forsook its adopted perch. Another I fired at four times successively without effect; in spite of this it always returned to the same tree. They are very wary and difficult to shoot; and I have spent days dodging them backwards and forwards without getting near enough for a shot. June and July are the flowering months in the elevated regions. This may attract them; for I have met with them in all parts of the Nevada, especially in a valley at an elevation of 11,000 feet, where they were abundant, but so shy that there was no approaching them within a hundred yards. On crossing to the northern flank I found them as low down as San Miguel, 6000 feet. At San Antonio, 3450 feet, not ten miles distant, they were unknown.

“On previous visits to San Sebastian in February and March this species was not there; but the Indians told me that after the forest rains a very beautiful “Chupa-flor” puts in an appearance, without,

however, being very common. Passing a couple of days in San José in August, I found they had disappeared.' ”

218. *Anthoscenus longirostris longirostris* (Vieillot).

Floricola longirostris BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 (“Santa Marta”).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 139 (Bonda and Cacagualito).

Anthoscenus longirostris stewarti CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 311 (“Santa Marta”; crit.).—SIMON, Cat. Fam. Trochilidae, 1921, 392 (“Santa Marta,” in range).

One specimen: Dibulla.

This specimen, an adult male, differs from Venezuelan and Costa Rican skins in the rich coppery bronze color of the upper tail-coverts, the middle rectrices also being strongly tinged with this color, while the lateral rectrices are not green at the base, as is usual. The coppery bronze of the nape is also more intense. These characters are all probably attributable to high plumage.

A single specimen was taken at Dibulla, feeding about the blossoms of the shade-trees in the cacao plantation. Mr. Smith took only four specimens in all, at Bonda and Cacagualito, while Mr. Brown secured but one, which is labelled as having been collected at an altitude of 6,000 feet above Santa Marta. Probably there is some mistake about this, as the species is not known to range as a rule beyond the lowlands of the Tropical Zone.

219. *Threnetes ruckeri* (?) subsp.

One specimen: Don Diego.

This example agrees with two others from the State of Santander, Colombia, in the pale coloration of the under surface in general, with the cinnamon area more restricted, and in the greener, less bronzy upper parts, as compared with Costa Rican specimens. The Colombian birds are clearly entitled to subspecific recognition, but the matter of naming them is complicated by the uncertainty regarding the proper application of the name *ruckeri*. We agree with Mr. Hellmayr (*Proceedings Zoölogical Society of London*, 1911, 1177, note) that Bourcier's description can scarcely apply to the species at present known under this name. Furthermore, Panama birds differ somewhat from those from Costa Rica, so that until we know more about the characters of the type-specimen of *ruckeri* it would be unsafe to make any

formal separation. Should this name be found not pertinent both the Costa Rican and Colombian forms would have to stand as subspecies of *T. fraseri* (Gould).

One individual of this species was taken and two others seen in the heavy forest of the coastal plain at Don Diego. They were feeding as usual from the flowers of the wild plantain. They were noted during the last days of the collecting at this point, and possibly further search would have revealed more. This record involves a considerable extension of the range of the species.

220. *Glaucis hirsuta affinis* Lawrence.

Glaucis hirsuta (not *Trochilus hirsutus* Gmelin) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 134 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 142 (Bangs' reference); XXI, 1905, 276 (Don Diego; Bangs' record), 281 (Don Diego; descr. nest and eggs).

Glaucis hirsuta affinis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 333 (Don Diego, in range; references).

Twenty-six specimens: Don Amo, Don Diego, Tierra Nueva, Trojas de Cataca, Fundación, and Dibulla.

In this fine series the difference in the colors of the sexes, referred to by Mr. Ridgway under typical *hirsuta*, is well illustrated. The present form differs from *hirsuta* in its generally duller, paler coloration, the abdomen and under tail-coverts being mostly grayish white, with little or no rusty color except on the flanks. No. 44,552, Don Diego, January 23, is a partial albino, the abdomen being almost wholly white, as well as many feathers on the head.

A Tropical Zone species, found throughout the lowlands, but very scarce in the semi-arid portions. It is entirely a bird of the forest, keeping low down. It is very partial to the blossoms of the wild plantain, feeding from them exclusively in season.

Mr. Smith sent in a nest with two eggs, collected at Don Diego on May 19. "The nest, attached to the under surface of a wild banana leaf, is composed of fine vegetable fibers and partly covered externally with large strips of a greenish gray lichen. The eggs measure 15×9 mm., being very elongate oval, the two ends similar in form."

221. *Phaethornis striigularis striigularis* Gould.

Pygmornis striigularis BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 93 (La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 138 (Bangs' reference).

Phaethornis striigularis striigularis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 327 (La Concepción, in range; Bangs' reference).

Two specimens: Don Diego and Chirua.

Agreeing well with specimens from the interior of Colombia. In the male of this species the throat and breast are noticeably darker, with the stripes more distinct, than in the female.

In addition to the localities above specified, the writer has seen this species in the foothills back of Santa Marta as well as in the valley above Bonda, towards Don Amo, and in the valley below Las Vegas, but it is very scarce and most difficult to secure. It keeps in the heavy forest, always near the ground and amongst thick undergrowth. Often a bird will suddenly come up to within a yard of one's face and hover for a few seconds, then dart off and disappear, not to return. The species evidently ranges over the lowlands and lower foothills of the mountains on the north and west slopes, from sea-level up to 3,000 feet.

222. *Phaethornis anthophilus anthophilus* (Bourcier and Mulsant).

Phaethornis anthophilus REICHENBACH, Aufz. der Colibri, 1854, 14 ("Santa Marta," in range).—REICHENBACH, Troch. Enum., 1855, 12 ("Santa Marta," in range).—SALVIN and GODMAN, Ibis, 1880, 171 (Valle de Upar and Valencia).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 275 (Valle de Upar and Valencia).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 138 (Salvin and Godman's and Bangs' references); XXI, 1905, 276 (Don Diego; Salvin and Godman's and Bangs' records).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 137 ("Santa Marta," in range).

Ten specimens: Buritaca, Don Amo, Don Diego, La Tigrera, Trojas de Cataca, Tucurinca, and Loma Larga.

A species which is distributed over the whole of the littoral Tropical Zone, extending around to the low country on the south side of the Sierra Nevada. Simons says that he found it "in the forest on flowers; rare and very shy," which accords with the experience of the writer. Like all of this genus it is accustomed to keep low down in the forest, near the ground. It was most abundant at Don Diego, where it was feeding from the flowers of the wild plantain.

223. *Phaethornis longirostris susurrus* Bangs.

Phaethornis longirostris (not *Ornismya longirostris* Delattre) SALVIN and ELLIOT, Ibis, 1873, 5 ("Santa Marta"; crit.).—VON BERLEPSCH, Journ.

- f. Orn., XXXV, 1887, 334 ("Santa Marta," *vide* Elliot).—SALVIN, Cat. Birds Brit. Mus., XVI, 1892, 272 (Pueblo Viejo).—HARTERT, Ibis, 1897, 425, in text ("Santa Marta," in range; crit.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 134 ("Santa Marta"), 173 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 138 (Cacagualito and Las Nubes). *Phathornis longirostris susurrus* BANGS, Proc. New England Zool. Club, II, 1901, 64 (Chirua [type-locality], Pueblo Viejo, San Francisco, and La Concepción; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—OBERHOLSER, Proc. U. S. Nat. Mus., XXIV, 1902, 313 ("Santa Marta," in range).—DUBOIS, Syn. Avium, II, 1903, 1064 ("Santa Marta," in range; ref. orig. descr.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 320, footnote (Santa Marta [region]; meas.). *Phathornis susurrus* BRABOURNE and CHUBB, Birds S. Am., I, 1912, 107 (ref. orig. descr.; range). *Phathornis longirostris susurrus* CORY, Field Mus. Zool. Series, XIII, 1918, 156 (ref. orig. descr.; range). *Phathornis cassini susurra* SIMON, Cat. Fam. Trochilidae, 1921, 254 (references; range).

Thirty-one specimens: Onaca, Cincinnati, Minca, Las Taguas, Don Diego, Pueblo Viejo, Chirua, and Heights of Chirua.

The peculiarities of Santa Marta examples of *P. longirostris* were not detected until the acquisition of a good series from that region, collected by Mr. Brown, enabled Mr. Bangs to point them out and discriminate the bird as a new subspecies. The characters he assigns hold good in the present fine series, which is decidedly more buffy below than a series of the Costa Rican form. So far as known *P. longirostris susurrus* is confined to the Santa Marta region, where it ranges over the north and northeast slopes of the San Lorenzo and Sierra Nevada between 2,000 and 5,000 feet, the latter altitude being based on a record from the Heights of Chirua. Its area of greatest abundance, according to the experience of the writer, is lower down in the Sierra Nevada than on the San Lorenzo. Two specimens were even taken at Don Diego, on the north coast. It is more addicted to tangled woodland and the fringes of trees and shrubbery along streams, although found in the heavy forest as well, and is usually seen low down. During the breeding season the males are almost continually singing their quaint little chirping song of two or three notes. At such times they conceal themselves in a tangle of vines or shrubbery, open their bills widely, twist their heads about and twitch their tails up and down in a perfect ecstasy of song.

Family DENDROCOLAPTIDÆ. WOODHEWERS.

224. *Dendrocincla lafresnayei lafresnayei* Ridgway.

Dendromanes meruloides (not *Dendrocops meruloides* Lafresnaye) SALVIN and GODMAN, Ibis, 1879, 202 (Manaure; crit.).

Dendrocincla olivacea (not *Dendrocops olivaceus* Eyton) SCLATER, Cat. Birds Brit. Mus., XV, 1890, 166 (Manaure).

Dendrocincla olivacea anguina BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.); XIII, 1899, 100 (Palomina, Chirua, and La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121 (Bangs' record).

Dendrocincla meruloides ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 156 (Salvin and Godman's reference).

Dendrocincla olivacea lafresnayei ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 156 (Minca, Onaca, Las Nubes, and Valparaiso; crit.).—OBERHOLSER, Proc. Acad. Nat. Sci. Philadelphia, 1904, 457 (Santa Marta region; syn.; crit.).

Dendrocincla anguina SHARPE, Hand-List Birds, III, 1901, 75 (ref. orig. descr.; range; syn.).—DUBOIS, Syn. Avium, II, 1903, 1070 (ref. orig. descr.; syn.).

Dendrocincla lafresnayei lafresnayei RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 288 (diag.; syn.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 418 (Valparaiso; crit.).

Dendrocincla meruloides lafresnayei HELLMAYR, Proc. Zool. Soc. London, 1911, 1156 (Manaure; range; crit.).

Additional records: Tucurínca (Carriker).

Thirty-one specimens: Don Diego, Valparaiso, Cincinnati, Las Taguas, La Tigrera, Las Vegas, Minca, Mamatoco, Pueblo Viejo, and Fundación.

Dr. Oberholser and Dr. Chapman have both remarked on the variations shown by the respective series of this form studied by them. There is certainly a considerable range of variation in color, some specimens being more olivaceous, others more brownish by comparison. It is fairly certain, however, that an olivaceous cast indicates immaturity, as also does a dark-colored bill.

As will be seen from the above list of references, the present form has suffered numerous nomenclatural vicissitudes. Salvin and Godman referred their single specimen to *D. meruloides*, from which it seems specifically distinct. Sclater confused it with the Panama form, adopting therefor a name which turns out to be preoccupied. Mr. Bangs described it as a new subspecies. Dr. Allen and Dr. Oberholser

referred it to *D. lafresnayei*, a species described by Mr. Ridgway from a specimen in the Lafresnaye collection supposed to have come from the "Upper Amazon," but which must have really come from some place in western or northern Colombia, as indicated by Mr. Hellmayr. Dr. Chapman now proposes to make Valparaiso (*i.e.*, Cincinnati) the accepted type-locality for the form, to which there certainly can be no objection.

This is a bird of the Tropical Zone, and is probably the most common and widespread species of the family in the Santa Marta region, ranging from sea-level up to 5,000 feet, but more abundant in the lowlands of the northeast and southwest sides of the Sierra Nevada. It is a forest-dweller entirely, and is gregarious in its habits, being rarely seen alone, but rather in pairs, small flocks, or in company with other kinds. It is one of the species which are invariably seen following the swarms of foraging ants in the forest, feeding on the insects which are thus driven out of the rubbish on the ground.

225. *Campylorhamphus trochilirostris venezuelensis* (Chapman).

Two specimens: Valencia.

A single pair of birds were taken at Valencia on August 7, 1920, these constituting the first record of a *Campylorhamphus* for this region. They agree closely with Venezuelan specimens.

***Sittasomus sylvioides levis* Bangs (?).**

Sittasomus olivaceus (not of Wied) SALVIN and GODMAN, Ibis, 1879, 202 (Manaure).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 119 (Manaure).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 157 (Salvin and Godman's reference).

The only record for a *Sittasomus* in the vicinity of our region is that quoted above, referring to a single specimen shot by Simons at Manaure, May 7, 1878. This example was referred to *S. olivaceus* both by Salvin and Godman and by Sclater, but as the latter author confused several easily distinguishable forms under that name it is impossible to be sure to which of these the bird in question belongs without actual examination. The chances are, however, that it will turn out to be *S. sylvioides levis*, described from Chiriqui, of which there is a perfectly typical example in the Carnegie Museum collection from Jaraquiel, Bolivar, Colombia.

226. *Thripobrotus lacrymiger sanctæ-marthæ* (Chapman).

Picolaptes lacrymiger (not *Dendrocolaptes lacrymiger* Des Murs) SALVIN and GODMAN, Ibis, 1880, 171 (San Sebastian).—SCLATER, Cat. Birds Brit.

Mus., XV, 1890, 148 (San Sebastian).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 100 (La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 156 (Valparaiso, El Libano, Las Nubes, and San Lorenzo).

Picolaptes lacrymiger sanctæ-marthæ CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 150 (Valparaiso; orig. descr.; type in coll. Am. Mus. Nat. Hist.); XXXVI, 1917, 423, in text (crit.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 245 (ref. orig. descr.).

Thripobrotus lacrymiger sancta-martæ CHAPMAN, Proc. Biol. Soc. Washington, XXXII, 1919, 262, in text (crit.).

Twenty-seven specimens: Las Nubes, Cincinnati, Las Taguas, Las Vegas, San Lorenzo, Pueblo Viejo, Cerro de Caracas, Chirua, and Heights of Chirua.

The characters to which Dr. Chapman calls attention hold good in the above series upon comparison with another from the interior of Colombia, the broader striping below, upon a paler ground, being a fairly constant if not a very conspicuous feature. Seasonal variation is much less than would be expected.

This is essentially a species of the Subtropical Zone, although descending sometimes to the upper part of the Tropical. It is found only in the heavy forest where such exists between 3,000 and 7,000 feet. It is rare below 4,000 feet, however, and sometimes straggles up to as high as 9,000 feet. It is fairly common throughout its range under favorable conditions.

227. *Thripobrotus albolineatus* (Lafresnaye).

Sixteen specimens: Mamatoco, Fundación, Don Diego, Tucurínca, and Valencia.

Due allowance being made for seasonal variation, we can see no difference between the above series and a considerable number of other specimens coming from various parts of Venezuela and Colombia. Although no specimens from the State of Cumaná in the former country have actually been examined, it would seem unlikely, judging from the variation exhibited in our series, that a recognizable form inhabits that region, as said by Messrs. Hartert and Goodson (*Novitates Zoologicae*, XXIV, 1917, 417). The alleged type of *Dendrocolaptes albolineatus* Lafresnaye in the Paris Museum was examined by Sclater, and found to be identical with a specimen from Carupano, Venezuela (cf. *Catalogue of the Birds in the British Museum*, XV, 1890, 152). A specimen with a better claim to be Lafresnaye's type is in the collection of

the Museum of Comparative Zoölogy, and agrees substantially with a specimen from Las Quiguas, Venezuela, forwarded to Mr. Bangs for comparison. There can therefore be no doubt as to the proper application of the name.

It is difficult to understand how this bird could have been overlooked by all previous collectors in this region. It is true that it is very rare in the lowlands back of Santa Marta, but it is certainly common enough at Don Diego and Fundación. It prefers the open woodland, and at Don Diego was taken mostly in the cacao- and coffee-trees. It was met with on the other side of the mountains also, at Loma Larga and Valencia.

228. *Xiphorhynchus nanus nanus* (Lawrence).

Dendroornis susurrans (not *Dendrocolaptes susurrans* Jardine) SALVIN and GODMAN, Ibis, 1880, 171 (Minca).—SCLATER, Ibis, 1889, 353. in text ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 133 (Minca). *Dendroornis nana* ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 157 (Cacagualito).

Xiphorhynchus nanus nanus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 250, 252 (Santa Marta localities; meas.).

Additional records: Mamatoco (Carriker):

Nineteen specimens: Don Diego, Trojas de Cataca, Fundación, Cincinatti, Las Vegas, Agua Dulce, and Tucurinca.

Messrs. Hellmayr and von Seilern (*Archiv für Naturgeschichte*, LXXVIII, 1912, 110) reduce this to a subspecies of *X. guttatus*, and it must be admitted that the similarity between *X. guttatus sororius* of the Orinoco region and the present form is close. However, *X. nanus* is decidedly smaller in all its dimensions, the throat is more buffy, and the general coloration is more olivaceous, less brownish, than in *sororius*, so that for the present at least we prefer to follow Mr. Ridgway in recognizing it as a distinct species.

Deferring until a future occasion a discussion of the propriety of recognizing a Venezuelan form, it may be stated that the Santa Marta series agree substantially with Panama specimens. Such variation as obtains is due partly to season, partly to age. In fresh plumage specimens are more olivaceous, less rufescent. Immature birds have dark-colored bills, and the markings of the under parts are more distinct, with some tendency to cross-barring. No. 9,386 (Don Diego, May 17) is peculiar in having the shafts of the rectrices white toward the base.

Mr. Brown failed to meet with this bird at all, and Mr. Smith secured only a few specimens. The writer did not take it at any point in the Sierra Nevada proper after leaving the coast. It was most abundant at Don Diego, but was found sparingly in the woodland on the west side of the Sierra Nevada, as well as in the foothills of the San Lorenzo. It is confined to the Tropical Zone, running up occasionally as high as 4,500 feet, but rarely above 2,500 feet. It is a typical tree-creeper, rather solitary in its habits, spending its time in climbing in spirals up the trunk of a tree, and then flying to the foot of another and repeating the performance.

229. *Xiphocolaptes procerus fortis* Heine.

Xiphocolaptes fortis HEINE, Journ. f. Orn., VIII, 1860, 185 (Cartagena or Santa Marta [?]; orig. descr.; type in coll. Heine Mus.; crit.).—RIDGWAY, Proc. U. S. Nat. Mus., XII, 1890, 19 (Santa Marta [?]; reprint orig. descr.).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 142 (ref. orig. descr.).—DUBOIS, Syn. Avium, I, 1900, 188 (ref. orig. descr.).—SHARPE, Hand-List Birds, III, 1901, 82 (in list of species).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 253 (ref. orig. descr.).

Dendrocolaptes fortis GRAY, Hand-List Birds, I, 1869, 176 (in list of species).—GIEBEL, Thes. Orn., II, 1875, 25 (ref. orig. descr.).

Xiphocolaptes procerus (not of Cabanis and Heine) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 177 (Macotama).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 157 (Valparaiso, El Libano, San Lorenzo, and Las Nubes).

Xiphocolaptes promeropirhynchus procerus HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 111 (Santa Marta [region], in range).

Additional records: San Miguel, Chirua (Brown).

Thirty-one specimens: Las Nubes, Valparaiso, Cincinnati, San Lorenzo, Cerro de Caracas, Las Taguas, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, Paramo de Mamarongo, and Heights of Chirua.

The splendid series of *Xiphocolaptes* from Venezuela and Colombia in the collection of the Carnegie Museum has made possible the elucidation of the various forms inhabiting these regions with some degree of finality. To begin with, we have twenty-six skins of *X. promeropirhynchus*, which, with its relatively short bill and more heavily streaked under parts, may be regarded as specifically distinct. Of *X. procerus procerus*, described from Caracas, Venezuela, we have twelve specimens, including one from the type-locality. The Santa Marta speci-

mens above listed are a most interesting series. Several specimens in juvenal plumage (June 19 and 26) may readily be distinguished by the looser character of their plumage, by their shorter bills, and by the tendency of the buffy shaft-streaks of the pileum, throat, and breast to be indented by dusky spots, giving a partially barred effect. These shaft-streaks, too, are wider and more deeply buffy than in the adult. Some of the adults are decidedly brownish in general coloration, while others are more olivaceous. Some of the latter are scarcely distinguishable from the Venezuelan skins except by the somewhat longer bill, which is a very constant feature. As a series, however, the Santa Marta birds average more finely streaked below, with less spotting posteriorly. *X. fortis* was described from a specimen of unknown locality, but supposed to be from Cartagena or Santa Marta. Heine's description and comparisons apply so well to the present series that we feel little doubt as to the correctness of his guess with reference to the source of his type. While by no means a strongly marked form, it may be allowed recognition. Further west along the coast of Colombia it is replaced by another and very distinct form, *X. procerus rostratus* Todd (*Proceedings Biological Society of Washington*, XXX, 1917, 5), easily recognized by its larger bill, rich rufescent coloration, and more heavily streaked under parts.

A not uncommon species in the forested parts of the Subtropical Zone, between the altitude of 5,000 and 9,000 feet. It is usually met with in pairs or family groups, but seldom in the company of other wandering species. It is especially fond of hunting among the bromelias, where there are always insects, salamanders, frogs and frogs' eggs to be found.

230. *Dendroplex picirostris picirostris* Lafresnaye.

Dendroplex picirostris LAFRESNAYE, Rev. Zoöl., X, 1847, 76 (Rio Hacha; orig. descr.; type now in coll. Acad. Nat. Sci. Philadelphia).—SCLATER, Cat. Am. Birds, 1861, 165 ("Santa Marta").—WYATT, Ibis, 1871, 115, 331 (Santa Marta).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 68 (range).—GIEBEL, Thes. Orn., II, 1875, 35 (ref. orig. descr.; syn.).—SALVIN and GODMAN, Ibis, 1880, 171 (Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 139 (Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—STONE, Proc. Acad. Nat. Sci. Philadelphia, 1899, 51 (crit. on type).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1901, 157 (Bonda); XXI, 1905, 288 (Bonda; descr. nest and eggs).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 252 (ref. orig. descr.; range).

Dendrocolaptes picirostris GRAY, Hand-List Birds, I, 1869, 177 (range).

Dendroplex picus picirostris CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 422 (Bonda; crit.).—BANGS and PENARD, Bull. Mus. Comp. Zool., LXIV, 1921, 370 (Rio Hacha and "Santa Marta"; crit.).

Additional records: Tucurínca (Carriker).

Twenty-eight specimens: Bonda, Mamatoco, Gaira, Fundación, Punto Caiman, Dibulla, and Santa Marta.

We consider this form specifically distinct from the more southern *D. picus*. It was described by Lafresnaye in 1847 from specimens purporting to come from Rio Hacha, in the northeastern corner of the region covered by the present paper, his types being still extant in the collections of the Academy of Natural Sciences of Philadelphia and of the Museum of Comparative Zoölogy respectively. Some specimens of the present series are decidedly rufescent below, while others are more olivaceous, but this difference is apparently not dependent on either locality, age, or season. Immature birds (August to October) may readily be told by their darker and shorter bills, while there is a tendency for the stripes on the breast to continue down over the abdomen.

A Tropical Zone species, confined entirely to the lowlands and lower edge of the foothills, and not often seen outside of the semi-arid section or the drier parts of the forested section. It was recorded by the writer at Rio Hacha, the type-locality, in July, 1920, and also at Arroya de Arenas, Fonseca, and near Badillo. It prefers the thorny scrub and cacti, and is never seen in dense forest. Dr. Allen describes the nest as placed in an abandoned woodpecker hole in the top of a dead stump, and built of a felted lining of plant-down mixed with bits of plant-stems at the bottom of the cavity. The eggs are three in number, pure white.

231. *Dendrocolaptes validus seilerni* Hartert and Goodson.

Dendrocolaptes validus (not of Tschudi) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 156 (Valparaiso, El Libano, and Las Nubes).

Dendrocolaptes validus validus? RIDGWAY, Proc. Biol. Soc. Washington, XXII, 1909, 73 (Santa Marta [region]; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 229, 233, footnote (Santa Marta region; crit.).

Dendrocolaptes validus multistrigatus (not of Eyton) HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 118 ("Santa Marta" [?], in range).

Seventeen specimens: El Libano, Las Nubes, Cincinnati, San Lorenzo, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, and Heights of Chirua.

The subspecific determination of this series has been until very recently an open question, depending on what the type of *Dendrocolaptes multistrigatus* might turn out to be. Messrs. Hartert and Goodson (*Novitates Zoologicae*, XXIV, 1917, 416) now report that the type in question agrees absolutely with Colombian skins from Bogotá collections, and they accordingly describe as new the form from the north coast of Venezuela, the characters of which had already been indicated by Messrs. Hellmayr and von Seilern. This disposition of the case is supported by the series in the collection of the Carnegie Museum. In addition to the characters claimed for *seilerni* it may be added that the bill (in the skin) is much lighter in color, and the upper parts are a shade browner, than in *multistrigatus*. Santa Marta specimens prove to be inseparable from those from northern Venezuela, although their bills average a little longer.

This bird is found only in the highlands of the Subtropical Zone, between about 4,500 and 7,000 feet. Since it is confined to the heavy forest, it is rarely seen in those parts of the Sierra Nevada worked by Mr. Brown and the writer, for the reason that there is very little heavy forest left at these elevations. It is not abundant anywhere, and is a solitary, noiseless bird.

Family FURNARIIDÆ. OVENBIRDS.

232. *Thripadectes flammulatus* (Eyton).

Thripadectes flammulatus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 158 (El Libano).

One specimen: Heights of Chirua.

So few specimens of this species have thus far found their way into collections that it is impossible to determine whether or not there is geographic variation. Scarcely any two examples of those examined in this connection are exactly alike in color and markings, but the difference may well be individual rather than geographical. In the above specimen the pileum and nape are black, distinctly different from the color of the back.

Evidently this is an extremely rare bird. Mr. Smith got but one specimen, at El Libano, at about 6,000 feet altitude, while the single bird secured by the writer was taken at about 5,000 feet above Chirua, in dense, humid forest. It seems to be a bird of the Subtropical Zone.

233. *Automolus rufipectus* Bangs.

Automolus rufipectus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 158 (Pueblo Viejo; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.); XIII, 1899, 99 (Sierra Nevada de Santa Marta, 3,000-7,500 ft.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 158 (Bangs' reference).—DUROIS, Syn. Avium, I, 1900, 194 (Santa Marta [region], in range; ref. orig. descr.).—SHARPE, Hand-List Birds, III, 1901, 68 (ref. orig. descr.; range).—HELLMAYR, Bull. Brit. Orn. Club, XV, 1905, 55, in text (crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, 1911, 213 (diag.; range; references).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 241 (ref. orig. descr.; range).

Additional records: La Concepción, San Antonio (Brown).

Seventeen specimens: Cincinnati, Las Vegas, Agua Dulce, Pueblo Viejo, Chirua, and Heights of Chirua.

This series bears out the characters ascribed to this species by the original describer. In immature dress, illustrated by specimens dated March 6, 7, and April 12, the throat and upper breast are slightly squamate from the narrow brown edgings of the feathers. No. 42,232, June 17, is moulting both remiges and rectrices; No. 42,557, July 22, is just completing the postnuptial moult of the remiges, and is in fine fresh plumage.

In the Sierra Nevada this *Automolus* ranges from 2,000 to 6,000 feet (7,500 feet, according to Mr. Brown), and in the San Lorenzo between 3,000 and 5,000 feet, or from the upper Tropical into the Sub-tropical Zone. It is partial to the heavy forest or thick second-growth, and is fond of dark tangles and ravines. It does little climbing, but keeps hopping about on or near the ground. It was perhaps most numerous at Pueblo Viejo in the thick scrub, but cannot be considered a common bird anywhere.

234. *Xenicopsis montanus anxius* Bangs.

Anabazenops striaticollis (not *Anabates striaticollis* Sclater) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 99 (Chirua, San Miguel, and La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 158 (Onaca, Valparaiso, El Libano, and Las Nubes).

Xenicopsis anxius BANGS, Proc. New England Zool. Club, III, 1902, 83 (Chirua; orig. descr.; type now in Mus. Comp. Zool.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 207 (diag.; range; ref. orig. descr.).—CORY, Auk, XXXVI, 1919, 273 (crit.).

Anabazenops anxius DUBOIS, Syn. Avium, II, 1903, 1072 (ref. orig. descr.).

Philydor montanus anxius HELLMAYR, Rev. Française d'Orn., II, 1911, 49, in text (ref. orig. descr.; meas.; crit.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 103 (range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 412, in text (crit.).

Philydor anxius BRABOURNE and CHUBB, Birds S. Am., I, 1912, 243 (ref. orig. descr.; range).

Twenty-seven specimens: Las Nubes, Valparaiso, Cincinnati, San Lorenzo, Las Taguas, Las Vegas, Pueblo Viejo, and Heights of Chirua.

The *Xenicops* collected in the Santa Marta region by Messrs. Brown and Smith was at first presumed to be *X. striaticollis*, the form inhabiting central Colombia, until Mr. Bangs pointed out its distinctive characters in 1902. There is little difference between the two forms in the color of the upper parts, but *anxius* is markedly yellower below, the throat and superciliaries being mustard yellow. It is clearly only subspecifically distinct from *striaticollis*, and according to Dr. Chapman and others the latter is similarly related to the Peruvian form, *montanus*.

A species which is found in the heavy Subtropical Zone forest between about 5,000 and 8,000 feet in the San Lorenzo, dropping down as low as 3,000 feet in the Sierra Nevada. It is an active, noisy bird, continually scrambling and hopping about among the branches of the trees, but unlike the stiff-tailed species doing little real climbing. It is fond of rummaging about in the bromelias for insects.

235. *Leptasthenura andicola extima* Todd.

Leptasthenura andicola (not of Sclater, 1869) SALVIN and GODMAN, Ibis, 1880, 170 (Sierra Nevada de Santa Marta, 10,000 ft.).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 36 (Sierra Nevada de Santa Marta).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 159 (Salvin and Godman's reference).

Leptasthenura andicola andicola HELLMAYR, Nov. Zoöl., XIII, 1906, 333 (Sierra Nevada de Santa Marta, in range).

Leptasthenura andicola extima TODD, Proc. Biol. Soc. Washington, XXIX, 1916, 97 (Paramo de "Macotama" [i.e., Chiruqua]; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, IV, 1916, 118 (reprint orig. descr.).—CHAPMAN, Am. Mus. Nov., No. 18, 1921, 9 (in list of species; range).

Three specimens: Paramo de Chiruqua.

Leptasthenura andicola was described by Sclater (*Proceedings Zoölogical Society of London*, 1869, 636) from Ecuador, and specimens

from Mt. Pichincha in that country agree in general with his figure. The three examples from the Paramo de Chiruqua, however, differ from the Ecuador birds in having the remiges and their coverts more extensively rufous-edged, the superciliaries narrower and less prominent, and the throat more extensively streaked, leaving only the chin immaculate. From *L. andicola certhia* von Madarasz (*Annales Musei Nationalis Hungarici*, I, 1903, 463), from the Andes of Merida (of which *L. montivagans* Riley, *Proceedings Biological Society of Washington*, XVIII, 1905, 219, is a synonym), it differs in its darker upper parts, darker color of the streaks on the pileum, and greater rufescence of the remiges and their coverts. Measurements are as follows:

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Tarsus.
45363	♀	Paramo de Chiruqua.....	65	93	11	20
45391	♂	Paramo de Chiruqua.....	69	95	11	21
45399	♀	Paramo de Chiruqua.....	65	94	11	19

This interesting form is peculiar to the Sierra Nevada de Santa Marta, where it occurs in the Paramo Zone. Simons marked his specimens as having been taken at 10,000 feet, but the three examples above listed were all secured between 12,000 and 15,000 feet. They were shot along the edges of tiny rivulets, where they kept hidden in the matted vegetation, and would not flush until almost stepped upon. Perhaps the bird is more abundant than it seems, owing to this habit of concealing itself and its dislike of flushing from cover.

236. ***Pœcilurus candei candei*** (Lafresnaye and D'Orbigny).

Synallaxis candei SALVIN and GODMAN, *Ibis*, 1880, 170, part ("Santa Marta").

Seven specimens: Fundación.

This series, collected in August and October, are all in rather worn plumage, and therefore not strictly comparable with a series of specimens from Cartagena, the type-locality of the species, and its vicinity. They appear to have the black of the throat more extended, and the white chin-spot and maxillary stripe correspondingly more restricted, than Cartagena examples, which, however, vary somewhat among themselves. If this is not due to wear, it indicates an approach to the characters of the recently described *P. atrigularis* (*Proceedings Biological Society of Washington*, XXX, 1917, 129), which, however, is otherwise very distinct.

This species, with its broad, rounded, terminally expanded rectrices, of soft, closely webbed feathers, certainly cannot belong in *Synallaxis*. In the paper just cited the writer has accordingly proposed to make it the type of a new genus, *Pæcilurus*.³³

A Tropical Zone species, with a very restricted local distribution. It was taken by the writer only in the waste land and weed-grown pastures along the Fundación River below the village of that name, and was not common even there. It is wont to keep close to the ground in the clumps of shrubbery and weeds, seldom coming out into the open.

237. *Pæcilurus candei venezuelensis* (Cory).

Synallaxis candei (not of Lafresnaye and D'Orbigny) SCLATER, Proc. Zool. Soc. London, 1859, 194 (Rio Hacha); 1871, 85 (Rio Hacha); 1874, 15 (Rio Hacha).—SALVIN and GODMAN, Ibis, 1880, 170, part (Valencia).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 54 (Valencia).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 158 (Salvin and Godman's reference).

Twenty specimens: Rio Hacha, Fonseca, and Valencia.

These specimens agree well with a series from Tocuyo, northern Venezuela, which are readily referable to this form, lately discriminated by Mr. Cory (*Field Museum Ornithological Series*, I, 1913, 292). It differs from typical *candei* in its generally paler coloration, both above and below; in the cap being more restricted posteriorly; in having more white on the throat, with a corresponding reduction in size of the black patch; and in the tail being more sharply bicolor.

This is one of the forms peculiar to the arid Venezuelan coast strip which reaches the Santa Marta region at its northeastern extremity. Many years ago Sclater recorded it from Rio Hacha, and it is certainly an abundant bird along the river there, favoring the stretches of salt plain and the outer fringes of the mangroves. It is found also in the thorny scrub and cacti in almost equal abundance, and here spends most of its time on the ground, hopping about and scratching a great deal. Simons secured a specimen at Valencia, in the Rio Cesar Valley, and his record has recently been confirmed by the writer.

238. *Synallaxis albescens albigularis* Sclater.

Synallaxis albescens (not of Temminck) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 177 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 159 (Bangs' reference).

* ³³ Unfortunately, through inadvertence, given a masculine instead of a feminine termination.

Additional records: Chirua, San Miguel, La Concepción, San Antonio (Brown).

Seven specimens: Fundación, Pueblo Viejo, and Heights of Chirua.

The Fundación specimens differ from the rest, and from a series from Venezuela, in having the cinnamon rufous area on the cap more restricted and more or less overlaid with brown, while the cinnamon rufous of the wings averages paler and less extensive also. Other material in the Carnegie Museum collection indicates the existence of an imperfectly differentiated littoral form possessing these characters in the lower Magdalena Valley. The case will be discussed more fully on another occasion.

The local distribution of this species is rather peculiar. It was found on the north slope of the Sierra Nevada at from 2,000 to 4,000 feet elevation, and in the lowlands only at Fundación. In the former locality it was taken in the shrubbery and tall grass in the valleys as well as in similar situations on the mountainside. At Fundación it was encountered in a pasture near the marsh, where tall weeds abounded.

239. *Synallaxis albescens perpallida* Todd.

Synallaxis albescens perpallida TODD, Proc. Biol. Soc. Washington, XXIX, 1916, 97 (Rio Hacha; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, IV, 1916, 118 (reprint orig. descr.).

Eleven specimens: Rio Hacha.

A small, pale local race of *S. albescens*, known only from the above specimens, and doubtless restricted in its range to the Goajira Peninsula. It is markedly whiter below than *S. albescens albigularis*, approaching thus *S. albescens hypoleuca* of eastern Panama, with the type of which it has been compared. The latter, however, is more rufescent, less grayish on the upper parts, wings, and tail; the cinnamon rufous of the pileum and wing-coverts is deeper and more extensive; and the forehead is brown, like the back, instead of gray. Specimens from Margarita Island differ still more, so that the form seems well worthy of recognition.

This bird was fairly common on the salty flats along the lower reaches of the Rio Hacha, where various shrubs and weeds abound.

240. *Synallaxis fusciorufa* Sclater.

Synallaxis fusco-rufa SCLATER, Proc. Zool. Soc. London, 1882, 578, pl. 13, fig. 1 (San Sebastian; orig. descr.; type now in coll. Brit. Mus.; crit.).—REICHENOW and SCHALOW, Journ. f. Orn., XXXII, 1884, 387 (reprint orig. descr.).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 53 (San Sebastian).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 177 (San Miguel; crit.).—BANGS, Proc. New England Zool. Club, I, 1899, 79 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 159 (Sclater's and Bangs' references).—DUBOIS, Syn. Avium, I, 1900, 198 (Santa Marta [region], in range; ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 231 (ref. orig. descr.; range).

Additional records: Chirua, Macotama (Brown).

Thirty specimens: San Lorenzo, Pueblo Viejo, Cerro de Caracas, Macotama, Paramo de Mamarongo, San Miguel, and Heights of Chirua.

In adults of this handsome species the wings and tail are deep cinnamon rufous or hazel, with the pileum and nape paler; the under parts are ochraceous tawny, lightening into clay-color posteriorly; and the back is dark olive gray. Young birds (of which there are several specimens, shot in June and July), on the contrary, have the cinnamon rufous pileum merely indicated, usually by a rufescent posterior margin, while the under parts are tawny olive, palest posteriorly, with faint indications of barring. Both adults and young have the inner webs of the rectrices toward the tips dusky brownish. One albinistic adult has numerous white feathers in the body-plumage.

The type of this *Synallaxis* was taken by Simons at San Sebastian, on the south slope of the Sierra Nevada, where later Mr. Brown secured additional specimens, as well as at El Mamon and San Miguel. In the vicinity of this latter place and Chirua it was probably the most abundant species of its family, according to the experience of the writer. It is restricted to the Santa Marta region, where it is essentially a species of the Subtropical Zone, ranging between 2,500 and 9,000 feet in the Sierra Nevada, and from 7,000 feet upwards in the San Lorenzo. It is almost entirely confined to the open, preferring bushes and shrubbery and tangled thickets. It is tame and easily approached.

241. *Acrorchilus hellmayri* (Bangs).

Synallaxis antisiensis (not of Sclater) SALVIN and GODMAN, Ibis, 1880, 170 (Santa Marta region; crit.).

- Siptornis antisiensis* SCLATER, Cat. Birds Brit. Mus., XV, 1890, 59 ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 99 (Santa Cruz, Paramo de Macotama, and Paramo de Chiruqua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 158 (Valparaiso).
- Siptornis hellmayri* BANGS, Proc. Biol. Soc. Washington, XX, 1907, 55 (Paramo de Macotama; orig. descr.; type now in Mus. Comp. Zool.).—BRA-BOURNE and CHUBB, Birds S. Am., I, 1912, 233 (ref. orig. descr.; range).
- Acrorchilus hellmayri* RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 184, footnote (*sp. opt.*).
- Cranioleuca hellmayri* CORY, Proc. Biol. Soc. Washington, XXXII, 1919, 151, 156 (diag.; range).

Twelve specimens: San Lorenzo, Cincinnati, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, and Cerro de Caracas.

A specimen secured by Simons from some point in this region was referred to the species now called *Acrorchilus antisiensis* both by Salvin and Godman and by Sclater, and when additional specimens came to hand as a result of the work of Messrs. Brown and Smith they were referred to the same species. Mr. Hellmayr presently discovered that the Santa Marta bird was really distinct from *A. antisiensis*, and upon his calling the attention of Mr. Bangs to the matter the latter at once described the new form, naming it after Mr. Hellmayr. It differs from *A. antisiensis* at a glance in having the pileum distinctly streaked, not plain, and in other details of coloration. As shown by the present series, the species is subject to considerable variation as regards the amount of rufous on the crown, dependent no doubt on sex and age. One worn specimen has scarcely any of this color visible.

Mr. Cory, the latest reviewer of this very difficult group, would reduce both *Acrorchilus* and *Asthenes* to synonyms of *Cranioleuca*. Taking into consideration the Santa Marta forms alone, we are scarcely prepared to follow him in this, believing that while *Acrorchilus* may be the same as *Cranioleuca* (the type of which we have not yet seen), it is certainly distinct from *Asthenes*, not only in its much shorter tarsus, but also in having a differently shaped wing, with the outer primary conspicuously reduced, and the wing-tip relatively longer and more pointed. We are inclined at least provisionally to regard these differences as generic in character.

Although Mr. Brown claims to have taken this species on the Paramos de Macotama and Chiruqua, the writer has found it to be a Subtropical Zone form, ranging from 5,000 up to 9,000 feet. It occurs

wherever forest is found between these limits, but does not seem to be abundant in any section visited. Like many other of the smaller species of this family, it is accustomed to hop about among the branches a great deal, instead of merely climbing. It is also fond of feeding among the bromelias which are so common at this elevation.

242. *Asthenes wyatti wyatti* (Sclater and Salvin).

Synallaxis wyatti SALVIN and GODMAN, Ibis, 1880, 170 (Sierra Nevada de Santa Marta, 10,000–12,800 ft.).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. London, 1884, 299 ("Santa Marta"; crit.).

Siptornis wyatti SCLATER, Cat. Birds Brit. Mus., XV, 1890, 71 (Sierra Nevada de Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 99 (Paramo de Chiruqua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 158 (Salvin and Godman's and Bangs' references).

Cranioleuca wyatti CORY, Proc. Biol. Soc. Washington, XXXII, 1919, 151, 157 (diag.; range).

Siptornis wyatti wyatti CHAPMAN, Am. Mus. Nov., No. 18, 1921, 4 (Paramo de Chiruqua; crit.).

Twenty-six specimens: Cerro de Caracas, Macotama, Paramo de Mamarongo, and Paramo de Chiruqua.

The type of this species came from the Paramo of Pamplona in the Eastern Andes of Colombia, a region from which no other specimens are yet available for comparison. Salvin and Godman ascribe the difference between their Santa Marta skins and the type to variation in age, but Dr. Chapman reports that they are "essentially identical." According to von Berlepsch and Taczanowski, Ecuador specimens are different, and they have recently been given a name. In any case, it is certainly a mistake to describe the lower parts as "pale ochraceous," when they are really pale buffy brown. Considerable variation is shown by this series in the color of the throat, which in some specimens is nearly white, and in others rich orange rufous. No. 45,275, April 10, is in juvenal dress, with short bill and tail; it is like the adult above, but a little more buffy below, the breast with indistinct narrow dusky bars.

This is essentially a species peculiar to the Paramo Zone, being found regularly on all the paramos from 10,000 to 15,500 feet, although straggling down to 8,000 feet, as proven by one specimen taken in the valley just above the village of Macotama. Simons secured a few specimens at these altitudes, and Mr. Brown took a pair on the Paramo de Chiruqua at 15,000 feet. It is in fact perhaps the com-

monest bird on the paramos with the exception of *Phrygilus unicolor nivarius*, being invariably found either among the low bushes and shrubbery or in the great heaps of boulders so abundant in these areas. In its general habits it much resembles the various species of *Synallaxis*.

243. ***Leptoxyura cinnamomea fuscifrons*** (von Madarasz).

Synallaxis cinnamomea (not *Certhia cinnamomea* Gmelin) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 158 (Cienaga).

Synallaxis fuscifrons VON MADARASZ, Orn. Monatsber., XXI, 1913, 22 (Aracataca; orig. descr.; type in coll. Budapest Mus.; crit.).

Twenty-seven specimens: Fundación and Trojas de Cataca.

In this species the rectrices are twelve in number, which at once rules it out of *Synallaxis*, where it has been left by most recent authors. Moreover, the wing is longer than the tail, and much rounded, the secondaries being almost as long as the primaries, so that it can hardly be referred to *Acrorchilus*. It seems less out of place in *Siptornis*, but on the whole it seems best to recognize it as belonging to a distinct genus, *Leptoxyura* Reichenbach.

Dr. von Madarasz has very properly separated the form found in Colombia and northern Venezuela from the typical Guiana bird, selecting as a type a specimen from our region collected by J. Ujhelyi. The new form *fuscifrons* differs, as its name implies, in having the forehead brown like the lores, instead of uniform with the crown; the upper parts, too, are more rufescent, less brownish, and the throat-spot is brighter yellow. Young birds, of which there are several in the present series, may be told by their pale under mandible, buffy suffusion on the under parts, buffy white superciliaries, and extension of the brown of the forehead over the pileum.

An abundant bird in the marshes at Fundación and in the inundated shrubbery and tall grass along the lower course of the Aracataca River. It frequents the thorny scrub and weeds growing in the marsh, and evidently feeds entirely on various small forms of aquatic life. The nest is characteristic of all the species of this group thus far observed by the writer, at least in the shape and mode of its construction, only the material used being different. It is a tunnel-shaped affair from twelve to fifteen inches in length, widening out at the far end to a diameter of about seven or eight inches, where the nest-cavity is placed. The entire structure is built of thorny twigs interwoven in a

remarkable manner, so that one end of each twig projects outwards, giving the nest a bristling appearance. There is no lining of any sort, the two or three pure white eggs being deposited on the rough twigs.

244. *Premnoplex brunescens coloratus* BANGS.

Premnoplex brunescens (not *Margarornis brunescens* SCLATER) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 100 (San Miguel and Chirua).

Margarornis brunescens ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 157 (El Libano, Las Nubes, and Valparaiso).

Premnoplex coloratus BANGS, Proc. New England Zoöl. Club, III, 1902, 84 (San Miguel; orig. descr.; type now in Mus. Comp. Zoöl.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 247 (ref. orig. descr.; range).

Premnoplex brunescens coloratus BANGS, Proc. Biol. Soc. Washington, XXI, 1908, 159 (Sierra Nevada de Santa Marta; diag.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 181 (diag.; range; references), 182, footnote (meas.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXXVIII, 1912, 109 ("Tagua" [Las Taguas]; descr.; range; crit.; ref. orig. descr.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 417, in text ("Santa Marta").

Twenty-seven specimens: Las Nubes, El Libano, Cincinnati, San Miguel, Paramo de Mamarongo, Las Taguas, San Lorenzo, Sierra Nevada de Santa Marta (6,000 feet), and Heights of Chirua.

This race, which in Colombia appears to be virtually confined to the Santa Marta region, is very distinct from the Central American *P. brunescens brunneicauda*, being in fact much more closely allied to true *brunescens*. It differs from the latter in the color of the upper parts, wings and tail, which are brighter, more rufescent brown, with the dusky edgings of the feathers of the back less prominent, and in the paler color of the throat.

A Subtropical Zone species, ranging from 5,000 to 9,000 feet wherever heavy forest is found, but rare above 7,000 feet. The more humid the conditions, the better this bird likes it. In its habits and behavior it is wren-like, haunting dark ravines and the bases of trees, keeping near or on the ground. It usually goes in pairs, or in the company of other kinds of similar haunts and habits. Its only note is a weak chirp, often repeated as it hops about in search of food.

245. *Xenops rutilus heterurus* Cabanis and Heine.

Xenops rutilus (not of Lichtenstein) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 158 (Las Nubes).

Xenops rutilus heterurus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 175 (Las Nubes, in range).

Three specimens: Cincinnati and Las Vegas.

These agree closely with specimens from Trinidad, Venezuela, etc.

Two were taken in the vicinity of Cincinnati in the heavy forest above 5,000 feet elevation, and one at Las Vegas. Mr. Smith secured a single bird at Las Nubes. Apparently it takes the place of *X. genibarbis neglectus* in the Subtropical Zone. It is an inconspicuous, quiet bird, easily overlooked where not common, and is usually to be found feeding more among the upper branches of the tall trees than about their trunks.

246. *Xenops genibarbis neglectus* Todd.

Xenops genibarbis (not of Illiger) SALVIN and GODMAN, Ibis, 1880, 171 (Minca).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 111 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 157 (Bonda, Minca, and Cacagualito).

Xenops genibarbis mexicanus (not of Sclater) RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 172 (Santa Marta region; crit.).

Twenty-one specimens: Minca, Mamatoco, La Tigrera, Las Vegas, Cincinnati, Fundación, Don Diego, Dibulla, and Tucurinca.

These agree well with specimens from northern Venezuela, upon which *X. genibarbis neglectus* (*Proceedings Biological Society of Washington*, XXVI, 1913, 173) was based. It is a pale race, readily distinguishable from typical *X. g. mexicanus* by being less brownish, more olivaceous in general coloration, with the wings and tail also paler, more cinnameous. Costa Rican examples are intermediate between the two forms aforesaid: they have recently been named *ridgwayi* by Messrs. Hartert and Goodson (*Novitates Zoologicae*, XXIV, 1917, 417). As claimed by these authors, *neglectus* is really much closer to *littoralis* of western Ecuador and Colombia. The writer has not yet been able to consult a satisfactory series of this latter form, but all Ecuador specimens so far examined appear to be appreciably darker in general coloration than the Venezuelan and Santa Marta skins in comparable plumage, with the wings and tail more rufous, less cinnameous. Although not a strongly marked race, *neglectus* may nevertheless be allowed to stand.

A Tropical Zone bird of wide altitudinal distribution, ranging from

sea-level up to 5,000 feet on the San Lorenzo, but apparently wanting in the central Sierra Nevada, no collector having ever found it there. It has recently been detected, however, at Loma Larga, on the eastern slope. It was most abundant in the forest at Dón Diego and Fundación, as a rule keeping high up in the trees, and usually in company with other species.

247. *Cinclodes oreobates* Scott.

Cinclodes fuscus (not *Anthus fuscus* Vieillot) SCLATER, Cat. Birds Brit. Mus., XV, 1890, 23 (Sierra Nevada de Santa Marta).

Cinclodes fuscus albidiventris (not of Sclater) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 98 (Paramo de Chiruqua; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 159 (Bangs' reference).

Cinclodes oreobates SCOTT, Bull. Brit. Orn. Club, X, 1900, 62 (Sierra Nevada de Santa Marta; orig. descr.; type in coll. Brit. Mus.).—SHARPE, Hand-List Birds, III, 1901, 50 (range).—DUBOIS, Syn. Avium, II, 1903, 1073 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 225 (ref. orig. descr.; range).

Twenty-four specimens: Paramo de Mamarongo and Paramo de Chiruqua.

Simons took at least three specimens of a *Cinclodes* at some point or points in the Sierra Nevada, as duly recorded by Sclater, who, however, "lumped" several very distinct forms under the name *C. fuscus*. When Mr. Bangs came to identify the two specimens received from Mr. Brown he referred them to *C. albidiventris*, but apparently without having seen authentic examples of this form, which he considered to be only conspecific with *C. fuscus*. It remained for the late W. E. D. Scott to differentiate and name the Colombian form, which he did in 1900, his description being based on the Santa Marta specimens in the British Museum received from Simons. The description of the posterior under parts as rufescent is inaccurate, however, for while in some individuals these parts are shaded with buffy, in others they are merely soiled white. *C. albidiventris*, as represented by specimens from Mt. Pichincha, Ecuador, in the collection of the Academy of Natural Sciences of Philadelphia, is by comparison more rufescent above than *C. oreobates*; the bill is shorter; the under parts are tinged with buffy, and the spotting on the throat and breast is less decided; the cinnamomeous areas on the wings and tail are darker; and the superciliaries are more decidedly buffy. Although the status and re-

lationships of the various forms of this genus are still involved in much obscurity, we are inclined on the whole to keep the present form specifically distinct. The series at hand shows considerable variation affecting the amount of spotting on the throat and breast.

This most interesting bird belongs to the Paramo Zone, having been found by Mr. Brown on the Paramo de Chiruqua at 15,000 feet, and by the writer in the same general region, from 12,000 to 16,000 feet. It is found only where there is water, as for example along the streams coming down from the lakes and melting snow. It always occurs in pairs, and is not particularly shy. It keeps to the rocks in and along the edge of the water, and evidently feeds entirely on aquatic insects.

248. *Furnarius leucopus agnatus* Sclater and Salvin.

Furnarius agnatus SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 61, 159 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.).—SALVIN and GODMAN, Ibis, 1879, 197, foot-note, and 1880, 170 (Valle de Upar).—VON PELZELN, Ibis, 1881, 408, part (Valle de Upar and "Sierra Nevada de Santa Marta"; descr.; references).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 14, part (Valle de Upar; descr.).—BANGS, Auk, XVI, 1899, 137, in text ("Santa Marta").—SHARPE, Hand-List Birds, III, 1901, 47, part (range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 222, part (ref. orig. descr.; range).

Furnarius leucopus var. *agnata* DUBOIS, Syn. Avium, I, 1900, 205, part (ref. orig. descr.; range).

One specimen: Rio Hacha.

Furnarius agnatus was described from two specimens secured by G. Joad in 1870, at Valle de Upar and Santa Marta respectively. In the *Catalogue of the Birds in the British Museum* these two examples are designated as cotypes, but Salvin and Godman distinctly state that the type came from Valle de Upar, and the measurements quoted in the original description, and later by von Pelzel, apparently bear this out. The question of the type-locality becomes very important in view of the discovery that the birds inhabiting the Goajira Peninsula, and extending eastward into the arid coast region of Venezuela, are sub-specifically separable from those of the restricted Santa Marta region and Magdalena Valley. Our single Rio Hacha specimen (No. 45,637) is very pale throughout, with the cinnamon rufous shading below much paler and more restricted; the wing is longer also, and the bill noticeably longer (26 mm.). The measurements correspond well with those given by von Pelzel for the type, and also in general with those given

by Mr. Cory for his *Furnarius agnatus venezuelensis* (*Field Museum Ornithological Series*, I, 1913, 291), which is almost certainly a pure synonym of *agnatus*. By analogy, the bird of Rio Hacha and Valle de Upar would be the same, leaving the form from west of the Sierra Nevada to be described as new. Both races prove on comparison to be so close to *F. leucopus* Swainson that they should probably stand as subspecies thereof, unless the circumstance of their isolation from that form should be held to forbid such an arrangement. About the only difference of any moment between the Santa Marta races (considered together) and *leucopus* is in the color of the cap, which is decidedly grayish in the former, but brownish in the latter.

This bird was noted at several points in the valley of the Rio Rancheria and Rio Cesar during the season of 1920, namely, Arroya de Arenas, Badillo, Fonseca, and Valencia, but unfortunately no additional specimens were secured.

249. *Furnarius leucopus exilis* Todd.

Furnarius agnatus (not of Sclater and Salvin) VON PELZELN, Ibis, 1881, 408, part (Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 14, part (Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 159, excl. syn. part (Bonda and Santa Marta).—SHARPE, Hand-List Birds, III, 1901, 47, part (range).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 289 (Bonda; descr. nest and eggs).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 222, part (range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 400 (Santa Marta [region]).

Furnarius leucopus var. *agnatus* DUBOIS, Syn. Avium, I, 1900, 205, part (range).

Furnarius leucopus exilis TODD, Proc. Biol. Soc. Washington, XXXII, 1920, 74 (Fundación; orig. descr.; type in coll. Carnegie Mus.).

Twenty-seven specimens: Bonda, Cienaga, Mamatoco, Santa Marta, Tierra Nueva, Gaira, Fundación, and Tucurínca.

In accordance with the foregoing considerations, it has become necessary to apply a new name to the *Furnarius* inhabiting the semi-arid region in the vicinity of Santa Marta, and which is now known to range for some distance westward along the coast, and up the valley of the Magdalena River. Compared with *agnatus*, it is much more richly colored throughout, and has a constantly shorter wing and bill, the latter member averaging only about 21 mm. in adult males. It has been met with by all the later collectors in this region, but has

heretofore been confused with *agnatus*, mainly because of the lack of topotypical specimens of that form.

A Tropical Zone form, confined to the lowlands, but apparently not present in the forested section between Rio Piedras and Dibulla. It is partial to wet places, but only such as are more or less in the open, such as irrigation-ditches, banks of small streams, and puddles of rain-water, and it is seldom seen in the forest. The bird spends most of the time on the ground, hopping about in the mud or shallow water, but when flushed will usually alight in a tree. It has a peculiar low call-note, not often heard.

Mr. Smith sent in two nests, each with two eggs, collected at Bonda on May 15 and September 18. "The nests are of the usual *Furnarius* style, made of layers of mud and saddled on a branch of a tree, forming a rounded, domed structure, with the entrance on one side near the bottom, communicating with an interior nest-chamber, lined with plant-stems, apparently mostly petioles of leaves. The nests are about $8\frac{1}{2}$ to 9 inches high, and about the same in diameter.

"The eggs are clear white, elongate oval, and measure 24.5×17.5 , 25×17.5 , 25.5×18 , 25×18.4 ."

250. *Sclerurus albigularis propinquus* Bangs.

Sclerurus albigularis (?) (not of Swainson) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 177 (Palomina; crit.).

Sclerurus albigularis propinquus BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 99 (Chirua; orig. descr.; type now in coll. Mus. Comp. Zool.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 157 (Las Nubes and Valparaiso; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 164 (diag.; range; ref. orig. descr.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 106, in text (Valparaiso; range; crit.; ref. orig. descr.).

Sclerurus propinquus SHARPE, Hand-List Birds, III, 1901, 72 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 246 (ref. orig. descr.; range).

Sixteen specimens: Las Nubes, Cincinnati, Las Taguas, Las Vegas, and Pueblo Viejo.

Mr. Bangs remarked on the characters of the first specimen examined by him, and described the form as new upon the receipt of a second example, comparing it with *S. canigularis* of Costa Rica and *S. albigularis* of Venezuela. As a matter of fact it is easily distinguished from either of these, but is so close to *S. scansor* as to be

separable therefrom only with difficulty, despite the gap existing between their respective ranges as at present known. *S. scansor* (which is certainly specifically distinct from *S. umbretta*) is a little larger than the present form, however; its throat is whiter; and the color of its upper parts is a shade less rufescent, especially on the crown.

No. 44,907, Pueblo Viejo, March 9, is a young bird, resembling the adult, but darker and duller, with the throat dusky grayish.

Apparently this *Sclerurus* is a rare bird everywhere. Mr. Brown took but two specimens, while Mr. Smith got thirteen. The writer secured only fourteen in all his collecting. It is found only in the very humid parts of the Subtropical Zone forest, between 5,000 and 7,000 feet on the San Lorenzo, and somewhat lower down in the Sierra Nevada, where it was met with only in the damp forest region to the southeast of Pueblo Viejo. It always stays on or very close to the ground, rarely perching on a low shrub or exposed root of a tree. Evidently all its food is secured out of the soft ground and humus, for the bill is invariably found soiled when the bird is shot.

The nest is placed at the end of a tunnel-shaped excavation, made by the birds themselves, in a more or less perpendicular bank of earth along some small creek or road through the heavy forest. Three such nests were taken along the road between Cincinnati and Las Taguas at 5,000 feet elevation. The cavity is about fifteen inches in length, the main portion being about two inches in diameter, while the nest cavity is enlarged to about twice that amount. The two ovoid, white eggs are deposited on a scant bed of dead leaves. All the nests were found in May and June.

Family FORMICARIIDÆ. ANT-BIRDS.

251. *Grallaria rufula spatiator* Bangs.

Grallaria spatiator BANGS, Proc. Biol. Soc. Washington, XII, 1898, 177 (Macotama; orig. descr.; type now in coll. Mus. Comp. Zool.; meas. crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 159, 184 (Bangs' reference).—DUBOIS, Syn. Avium, I, 1900, 170 (Santa Marta [region], in range; ref. orig. descr.).—SHARPE, Hand-List Birds, III, 1901, 44 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 218 (ref. orig. descr.; range).

Three specimens: San Lorenzo and Cerro de Caracas.

The San Lorenzo specimen, shot in July, and in fresh plumage, is

decidedly more rufescent than the other two from the Sierra Nevada, taken in March and April, so that due allowance must be made for seasonal variation in comparing this with other forms. It appears to be so closely allied to *G. rufula* of the Colombian Andes that its relationship thereto is best expressed by a trinomial. Practically the only constant difference between them is in the color of the abdomen, which is soiled white in *spatiator*, and decidedly buffy in *rufula*. Measurements of these three specimens are as follows:

No.	Sex.	Locality.	Date.	Wing.	Tail.	Bill.	Tarsus.
37917	♀	San Lorenzo	July 16, 1911	79	42	19	44
45155	♂	Cerro de Caracas ...	March 30, 1914	81	41	19	46
45223	♀	Cerro de Caracas ...	April 4, 1914	77	40	19	47

This is one of the rarest species of the family in the Santa Marta region, and frequents the most inaccessible cover. The records indicate that it is a species which inhabits the lower elevations of the Temperate Zone. The type and heretofore the only known specimen was secured by Mr. Brown at Macotama, at 8,000 feet. The writer took one female on the San Lorenzo at about the same altitude, in the thickest kind of growth of bromelias, ferns, and shrubbery. It was only by accident that this particular bird was secured, since while climbing a steep hillside over a recently cut trail it suddenly darted across the way about fifteen feet ahead, and was brought down with a snap-shot. Three years later two others, male and female, were secured near the top of the ridge at the Cerro de Caracas at 9,000 feet under very similar circumstances. The species seems to have no special call-note so far as known at present, nor will it come to any call, so that it is only by the most careful kind of still-hunting that it can be secured at all.

252. *Grallaria regulus carmelitæ* Todd.

Grallaria varia carmelitæ TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 81 (Pueblo Viejo; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 88 (ref. orig. descr.).

Two specimens: Pueblo Viejo.

At the time the preliminary diagnosis of this form was published no specimens of *Grallaria regulus* were available, and Dr. Oberholser, to whom the specimens were sent for comparison, reported that they rep-

resented an undescribed race of *Grallaria varia*. With topotypical material of both these species now before us it is obvious that the form in question is conspecific with *G. regulus* of Ecuador, instead of with the much larger and paler *G. varia* of Cayenne. In fact, *carmelitæ* is merely a dark race of *regulus*, differing in the darker, more brownish, less olivaceous color of the upper parts, and in being darker, more brownish, less ochraceous below, with more dark mottling. The throat and sides of the head are also darker and more uniform. The feet are marked as "bright leaden blue," the bill as "blackish horn, the extreme base below flesh-color." The male (type) measures: wing, 100; tail, 38; bill, 21.5; tarsus, 45. Female: wing, 103; tail, 35; bill, 21; tarsus, 42.

This fine species was one of the surprises of the trip to the Sierra Nevada. Both birds were taken in a tract of almost impenetrable forest on the southeast bank of the river below Pueblo Viejo. It is a mass of gigantic boulders, tangled with vines and undergrowth intermingled with heavy forest, and traversed by numerous small creeks. The taking of the first specimen was scarcely more than accidental, and then came the search for more. Four half-days were spent in the search, with the result that one more was secured and another was seen which escaped. They seemed to have no special call-note, and could not be "whistled up."

253. *Grallaria bangsi* Allen. (Plate IV.)

Grallaria bangsi ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 159 (El Libano [type-locality] and San Lorenzo; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—SHARPE, Hand-List Birds, III, 1901, 43 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1068 (Santa Marta [region], in range; ref. orig. descr.).—BRAEOURNE and CHUBB, Birds S. Am., I, 1912, 218 (ref. orig. descr.; range).

Fourteen specimens: El Libano, San Lorenzo, San Miguel, and Heights of Chirua.

Mr. Ridgway, in his dismemberment of the genus *Grallaria*, admittedly did not have a good representation of the species before him, and his diagnoses are thus not always satisfactory. Here, for instance, is a species which is exactly intermediate in style of coloration and structural characters between *Hypsibemon* and *Oropesus*. To which should it be assigned? To refer it to either one would necessitate a modification of the diagnosis, while the only other alternatives would



Grallaria bangsi Allen
(Four-fifths natural size)

be to unite these two groups or merge them both with *Grallaria*. We prefer to take the latter course.

The present series supports the characters assigned to the species, and is fairly uniform, although there is a slight variation in the amount of flammulation below. One specimen (May 25) shows slight rufescent edgings and tipping to the wing-coverts—doubtless a sign of immaturity.

This fine species was described from a single pair of birds forwarded by Mr. Smith to the American Museum of Natural History, these, together with another pair received by the Carnegie Museum from the same source (all taken on the slopes of the San Lorenzo), constituting the only examples known to science for some years. The writer was able to secure a series of twelve skins in July, 1911, and March and April, 1914. It is a bird of the Subtropical Zone, occurring on the San Lorenzo in small numbers between 6,000 and 8,000 feet, and in the Sierra Nevada between 4,000 and 6,000 feet. It is confined to the heavy forest, where it prefers dense tangled undergrowth, and is entirely terrestrial in its habits. Although very shy, the birds may be "whistled up" like *Formicarius analis virescens*, but it takes greater care and a quick finger on the trigger to get them.

254. *Grallaricula ferrugineipectus* (Sclater).

Conopophaga sp. BANGS, Proc. Biol. Soc. Washington, XII, 1898, 159 (Pueblo Viejo; crit.).

Conopophaga browni BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 100 (Chirua; orig. descr.; type now in coll. Mus. Comp. Zool.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 161 (Bangs' reference).—SHARPE, Hand-List Birds, III, 1901, 9 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1068 (ref. orig. descr.; range).

Grallaricula ferrugineipectus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 159 (Las Nubes).—SHARPE, Hand-List Birds, III, 1901, 45 ("Santa Marta," in range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 144 (diag.; range; references).—HELLMAYR, Nov. Zool., XX, 1913, 248 (Chirua; syn.; crit.).

Eleven specimens: Las Vegas, Cincinnati, and Pueblo Viejo.

The first specimens of this bird received by Mr. Bangs were inadvertently described by him as a new species of *Conopophaga*, and it was not until 1911 that the mistake was discovered and corrected by Mr. Ridgway, and a little later, independently, by Mr. Hellmayr. There is absolutely no difference between the above specimens and a

series from Venezuela in the collection of the Carnegie Museum. There is a slight variation in color, however, some individuals being a little more rufescent than others.

This handsome little ant-thrush is rather rare and found only at certain favored localities. Mr. Brown took it first at Pueblo Viejo, and later at Chirua. By the writer it was met with first at Las Vegas, where it was not uncommon in the very humid forest between 4,000 and 5,000 feet, the so-called "cloud belt." Only one was taken at Cincinnati, at the same altitude. At Pueblo Viejo five were taken in the same tract of forest in which *Grallaria regulus carmelitæ* was found, at only about 2,000 feet elevation. While essentially a bird of the Subtropical Zone, it extends down into the upper part of the Tropical under favorable circumstances. It is found as a rule in the more open parts of the forest, that is, where it is freer of undergrowth, and is usually seen perched in low trees or shrubs. It is not very shy, and when once seen is easy to secure.

A nest and two partly incubated eggs of this handsome little ant-thrush were taken on the plantation of the writer at Cincinnati, at an altitude of 5,500 feet, on October 10, 1916. The nest resembles that of *Manacus*, but is larger, and is saddled on a horizontal fork of a bush, about two feet from the ground, in heavy forest. It is a thin, almost transparent structure, made of rather coarse fibers, with a thin lining of finer material of the same sort. The eggs are pale greenish white, heavily blotched with burnt umber, especially at the larger end; they are strongly ovoid in shape.

255. *Formicarius analis virescens* Todd.

Formicarius moniliger virescens TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 80 (Fundación; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 87 (ref. orig. descr.).

Eight specimens: Fundación and Tucurínca.

Both Mr. Ridgway (*Proceedings U. S. National Museum*, XVI, 1893, 677) and Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 390) refer Columbian specimens of this group to *F. analis saturatus*, a name based on Trinidad specimens. Whatever disposition may eventually be made of birds from other parts of Colombia—and they are certainly very puzzling—it is clear that Santa Marta specimens represent a race distinct from *saturatus*. In the latter the upper parts are decidedly brownish (raw umber); in

the new form they are more olivaceous (medal bronze). The under parts in *virescens* are paler and grayer, less brownish; the upper and under tail-coverts are also slightly paler; the hindneck and sides of the neck are more distinctly cinnamoneous; and the tail is duller, less rufescent, with the dark apical portion averaging more restricted than in the Trinidad form, as represented by a series of thirteen specimens. It was at first thought that the tail was longer also, but comparison of a larger series has dispelled this idea. The type is in rather worn plumage, but specimens in fresh dress support the characters assigned to the form, despite the usual range of variation.

This ant-thrush was found only in the alluvial plain of the Tropical Zone at Fundación and Tucurínca, this being the first time that any member of the genus *Formicarius* has been reported from the Santa Marta region. Very likely it occurs throughout the lower Magdalena basin, wherever there is heavy forest. It keeps to the dark, damp parts of the forest, being rarely seen off the ground, is very shy, and very seldom takes flight. It has the same characteristic call-note as the other members of the genus, and is readily "whistled up" after a little practice. The female seldom answers to the call, however, and for this reason is not often taken.

256. *Myrmeciza longipes panamensis* Ridgway.

Myrmeciza boucardi (not of von Berlepsch) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 160 (Bonda and Cacagualito).

Myrmeciza boucardi panamensis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 107 (Santa Marta localities and references; meas.).

Twenty-four specimens: Bonda, Buritaca, Don Diego, Fundación, Tucurínca, and Valencia.

The choice of the specific name in this case depends on whether the unidentifiable *Myrmothera longipes* Vieillot is or is not congeneric with the later *Drymophila longipes* Swainson. Not being in a position at present to express any opinion on this question we follow Mr. Hellmayr.

The acquisition of a series of *M. longipes longipes* from Venezuela shows that the Santa Marta birds belong to a different form, in which the males have the chest and sides more strongly washed with gray. Females of the two forms, however, are much alike. The series includes several male specimens in transition dress, dated August 17 and 18, September 18, and November 19.

This species ranges over the whole of the littoral Tropical Zone except in the Goajira Peninsula, but is more abundant in the humid portions. It was fairly common, however, at Loma Larga, at an elevation of not less than 2,500 feet, at the eastern extremity of the Sierra Nevada. While a few were taken at Don Diego, and one at Valencia, it seems to be commoner on the west side of the mountains, around Tucurínca and Fundación. It is almost entirely terrestrial in its habits, but will often perch on a low shrub when flushed or disturbed. It occurs only in the deep forest or the denser parts of the woodland along streams.

***Gymnocichla nudiceps sancta-martæ* Ridgway.**

Pyriglena nudiceps (not *Myiothera nudiceps* Cassin) SCLATER, Proc. Zoöl. Soc. London, "1854," 1855, 113, in text ("Santa Marta").

Gymnocichla nudiceps SCLATER, Proc. Zoöl. Soc. London, 1858, 274 ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 272 ("Santa Marta").—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1892, 223 ("Santa Marta," in range, *ex* Sclater).

Gymnocichla nudiceps sancta-martæ RIDGWAY, Proc. Biol. Soc. Washington, XXI, 1908, 194 ("Santa Marta"; orig. descr.; type in coll. U. S. Nat. Mus.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 99 (diag.; range; ref. orig. descr.).

Gymnocichla sancta-martæ BRABOURNE and CHUBB, Birds S. Am., I, 1912, 208 (ref. orig. descr.; range).

Mr. Carriker did not succeed in detecting a *Gymnocichla* in the Santa Marta region. Its inclusion in the list rests on a specimen in the British Museum (probably one of those previously referred to by Sclater) purporting to come from Santa Marta, and on another in the U. S. National Museum, which has been made the type of a new subspecies by Mr. Ridgway. The characters which he assigned for its separation are not all borne out by an examination of the specimens, clearly referable to this form, in our collection from adjacent regions of Colombia, the white on the under wing-coverts proving to be a variable character. Males, however, have the concealed white interscapular patch much larger than in Costa Rican birds, and the posterior under parts duller black. Females of the two forms differ more conspicuously, that of *sancta-martæ* having the upper parts sepia where they are raw umber in the Costa Rican bird. If this species actually occurs in the Santa Marta region at all, it would probably be in the alluvial forest region of the Ciénaga Grande.

257. *Cercomacra nigricans* Sclater.

Cercomacra nigricans SCLATER, Proc. Zoöl. Soc. London, 1858, 245 ("Santa Marta" and "Bogotá"; orig. descr.; type now in coll. Brit. Mus.; crit.).—SCLATER, Cat. Am. Birds, 1861, 184 ("Santa Marta").—GIEBEL, Thes. Orn.,

I, 1872, 612 (ref. orig. descr.; syn.).—SCLATER and SALVIN, Nom. Av. Neotrop., 1873, 73 (range).—VON BERLEPSCH, Journ. f. Orn., XXXII, 1884, 308 ("Santa Marta," *ex* Sclater).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 267 ("Santa Marta").—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1892, 215 (crit. on type).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 91 ("Santa Marta," in range).—HELLMAYR, Proc. Zool. Soc. London, 1911, 1166 (ref. orig. descr.; range; crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 205 (ref. orig. descr.; range).—CHERRIE, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 287 ("Santa Marta").

Formicivora nigricans GRAY, Hand-List Birds, I, 1869, 304 ("New Grenada").

Twenty-six specimens: Tucurínca and Fundación.

Cercomacra nigricans was described by Sclater from a supposed Santa Marta specimen received from Verreaux, but until the present series was collected no one else had ever succeeded in finding it in this region, although meanwhile it had been traced westward to Panama and eastward to the Orinoco Valley. Sclater's type was an adult female, and two pages later he described the adult male as a member of a different genus, calling it *Pyriglena maculicaudis*. The present series includes a goodly number of immature birds, readily distinguishable by their brown wings (with the middle and greater coverts plain), paler color above, and gray and white squamations below. Several of these show moult of the remiges, rectrices, and body-plumage going on (September 20–October 19).

This Tropical Zone form is evidently confined in this region to the Magdalena basin, extending eastward to the edge of the alluvial plain, but scarcely entering the foothills. It is found in the more tangled parts of the heavy forest, always in pairs, keeping near the ground.

258. *Ramphocænus rufiventris sanctæ-marthæ* Sclater.

Ramphocænus rufiventris (not *Scolopacinus rufiventris* Bonaparte) SCLATER, Proc. Zool. Soc. London, 1858, 244 ("Santa Marta"); 1859, 383 ("Santa Marta").—SCLATER, Ibis, 1883, 95 ("Santa Marta"; crit.).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. London, "1883," 1884, 565 ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 261 ("Santa Marta").

Ramphocænus sanctæ-marthæ SCLATER, Proc. Zool. Soc. London, "1861," 1862, 380 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.; crit.).—SCLATER, Cat. Am. Birds, 1861, 184 ("Santa Marta").—GRAY, Hand-List Birds, I, 1869, 307 ("New Grenada").—GIEBEL, Thes. Orn., III, 1877, 420 (ref. orig. descr.).—SHARPE, Hand-List Birds, III, 1901, 28 ("Santa Marta," in range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 204 (ref. orig. descr.; range).

Ramphocanus rufiventris sanctæ-marthæ BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 160 (Bonda).—DUBOIS, Syn. Avium, II, 1903, 1069 ("Santa Marta," in range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 86, foot-note (meas.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 145, in text (Santa Marta region; crit.).

Eighteen specimens: Bonda, La Tigrera, Don Diego, Mamatoco, Fundación, and Valencia.

This form was described by Sclater from Santa Marta specimens, but was later merged by him with true *rufiventris*. Although not a very strongly marked form, it may be recognized by its paler, less rufescent general coloration, the back in particular being more brownish, less grayish. Care must be used to compare specimens in the same condition of plumage.

This Tropical Zone form is restricted to the lowlands, from Dibulla on the east around to Fundación on the west, extending back into the foothills up to about 1,000 feet. It is scarcely more numerous in one place than another, and is in fact rather rare everywhere. The birds keep low down in the forest or open woodland, in tangled undergrowth and masses of vines, and are usually seen in pairs. They have the curious wren-like habit of holding their long tail in a perpendicular position, and twitching it up and down when they utter their weak little chirp.

259. *Drymophila caudata hellmayri* Todd.

Formicivora caudata (not of Sclater) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 176 (Palomina; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 160 (Minca).

Drymophila caudata BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 100 (Chirua, La Concepción, San Francisco, Santa Cruz, San Antonio, and San Miguel; crit.).

Drymophila caudata caudata CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 145, in text ("Santa Marta"; crit.).

Drymophila caudata hellmayri TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 80 (Cincinnati; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 87 (ref. orig. descr.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 378 ("Santa Marta"; crit.).

Twenty-eight specimens: Cincinnati, Las Vegas, Pueblo Viejo, Chirua, and Heights of Chirua.

Mr. Bangs remarked upon the peculiarities of the first specimens of

this species received from the Santa Marta region, but later concluded that Sclater's description of the Bogotá bird must have been a mistake. Upon the receipt of the present series the discrepancies between Sclater's description (and plate) and the specimens themselves seemed so marked that a skin was forwarded to Mr. Hellmayr, with the request that he compare it with typical examples and report the result. He writes in reply: "The Santa Marta bird is a new form provided that all males from that locality have the middle of the crown plain black, without white streaks. *Dryophila caudata striaticeps* Chapman is simply *D. c. caudata* redescribed. Mr. Chapman was misled by the original description and accompanying figures. Adult males from Bogotá (topotypical) and the Western Andes of Colombia (*striaticeps*) (I have examined a series in the Paris Museum) are perfectly identical *inter se* and have the top of the head regularly streaked with white. In breeding time the white edges sometimes become nearly obsolete. It must have been such a specimen that served as type of Sclater's description. Birds from western Ecuador agree in every respect with the Colombian ones.

"The Santa Marta bird is fully like typical *D. caudata*, but has the middle of the pileum and nape uniform black. By this character it forms the passage to *D. caudata klagesi* Hellmayr and Seilern from northern Venezuela, which otherwise is, however, very different."

In addition to the character of the head-markings, on which Mr. Hellmayr lays so much stress, attention should be called to the fact that the tail also is different, being olivaceous, becoming rufescent towards the base, instead of deep neutral gray, with the subterminal black band much broader, as in typical *caudata*. It is with much pleasure that we name this new form in honor of Mr. Hellmayr, in recognition of his work on this genus.

A rare bird on the slopes of the San Lorenzo, because the conditions are not so suitable there, but found between 3,000 and 5,000 feet. In the Sierra Nevada it is much more numerous, occurring as low down as 2,000 feet. It avoids the deep forest, but favors rank second-growth, and especially exposed ridges overgrown with brake fern, which occurs in dense clusters from three to six feet high. It is an active, noisy bird, always revealing its presence by a constant chirping. Invariably it is met with in pairs or families, and often in company with *Synallaxis fuscorufa*.

260. *Microrhopias intermedia* (Cabanis).

Formicivora intermedia SALVIN and GODMAN, Ibis, 1880, 171 (Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 250 (Santa Marta and Valle de Upar).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 160 (Bonda).—BANGS, Proc. New England Zool. Club, III, 1902, 72, in text ("Santa Marta"; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 289 (Bonda; descr. nest and eggs).

Eriodora intermedia BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").

Formicivora cano-fumosus CHERRIE, Mus. Brooklyn Inst. Sci. Bull., I, 1909, 387 ("Santa Marta").

Microrhopias grisea intermedia HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 126 (Santa Marta; crit.).—HELLMAYR, Verh. Orn. Ges. Bayern, XIV, 1920, 287 ("Santa Marta"; crit.).

Microrhopias intermedia intermedia CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 617, in text (Bonda; crit.).

Microrhopias cano-fumosa CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 377, in text (Bonda; crit.).

Twenty-seven specimens: Bonda, Mamatoco, Dibulla, Rio Hacha, and Santa Marta.

With regard to the proper name of this form Dr. Oberholser and the writer have reached a conclusion differing from that recently published by Dr. Chapman. The matter may be briefly summarized as follows. In 1847 Cabanis described a bird under the name *Formicivora intermedia*, stating that his specimens came from Cartagena, Colombia, and the Aragua Valley, Venezuela. In 1914 Dr. Chapman received a number of specimens from the upper Magdalena Valley which were clearly distinct from Santa Marta birds, assumed by him to be typical *intermedia*, doubtless by reason of their coming from a region so close to Cartagena. The Magdalena Valley form, which Dr. Chapman accordingly described as new under the name *Microrhopias grisea hondæ*, differs from *M. intermedia* mainly in the color of the female, which has the under parts plain buffy, unspotted. Males of the two forms are practically indistinguishable. Recently Dr. Chapman has discovered that the Cartagena form is the same as that inhabiting the upper Magdalena Valley, instead of that from the Santa Marta region, as he had supposed. He has accordingly proposed to reduce *hondæ* to a synonym of *intermedia*, and to call the form with the spotted-breasted female *cano-fumosa*. It seems to us that these changes are inadvisable and unnecessary. The whole question hinges

on the determination of the type-locality of *Formicivora intermedia*. Cabanis had before him specimens from Cartagena and the Aragua Valley in Venezuela, as already said. He supposed that the birds from the respective localities were the same, whereas they are now known to represent two very distinct forms, of which the males happen to resemble each other very closely. His description of the male may apply to either form, but his description of the female can only apply to the Venezuelan bird. Hence, in the absence of any present evidence to the contrary, we are justified in taking Aragua Valley, Venezuela, as the type-locality of *intermedia*.³⁴ A considerable series from various localities in Venezuela are precisely the same as the Santa Marta specimens. It may be added that in the writer's judgment *M. intermedia*, *M. grisea*, *M. orenocensis*, and *M. hondæ* are perfectly distinct species, although the latter ought to be called *M. alticincta hondæ*, as already suggested by Dr. Chapman.

At first the young male of the present form closely resembles the adult female, as shown by No. 38,172, Mamatoco, September 2. Later on it goes through a partial moult, and assumes the adult dress for the most part, but retains the brownish wings of the juvenal dress and some buffy whitish feathers below, while the black area of the under parts is more restricted. This plumage is illustrated by No. 38,713, April 19.

This bird is confined to the more arid parts of the littoral Tropical Zone. It was not met with on the west or northeast sides of the Sierra Nevada until Dibulla was reached. It is abundant in the Goajira Peninsula as well as in the Rio Rancheria-Rio Cesar Valley, and fairly common in the dry scrub and cacti around Santa Marta outside the irrigated section. It is an active bird, continually uttering its weak little chirp, and is usually seen in pairs, low down in the scrub.

Mr. Smith sent in three nests to the American Museum of Natural History, all from Bonda, at dates of April 21, May 15, and September 18. "These nests are slight, pensile structures, suspended by the rim from the forked twigs of a horizontal branch. They consist of fine wire-like plant fibers, probably grass-stems, loosely woven to form the deep cup-shaped nest, which is fastened to the twigs by looping some of the fibers over them. They are so slight and open that the

³⁴ Since the above was written Mr. Hellmayr has independently reached the same conclusion.

eggs are plainly visible through the walls and bottom of the nest. They have an outside diameter of about 3 to 3½ inches, and a depth (inside) of about 2 inches.

"The [two] eggs are grayish white, thickly sprinkled with dots and small spots of lilac, with a few specks and blotches of very dark chocolate intermingled, the markings about the larger end almost wholly covering the surface. Measurements, 19×13 (average of four eggs)."

261. *Myrmopagis schisticolor sanctæ-martæ* (Allen).

Myrmotherula sanctæ-martæ ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 160 (Valparaiso [type-locality], etc.; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—SHARPE, Hand-List Birds, III, 1901, 23 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1070 ("Santa Marta." in range; ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 198 (ref. orig. descr.; range).

Hylophilus brunneus (!) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 171 (Las Nubes [type-locality] and Valparaiso; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—DUBOIS, Syn. Avium, II, 1903, 1102 ("Santa Marta," in range; ref. orig. descr.).

Pachysylvia brunnea SHARPE, Hand-List Birds, IV, 1903, 255 (ref. orig. descr.; range).

Myrmopagis schisticolor (not *Formicivora schisticolor* Lawrence) RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 70 (Valparaiso, in range).

Myrmotherula schisticolor sanctæ-martæ HELLMAYR, Proc. Zool. Soc. London, 1911, 1163, in text (Sierra Nevada de Santa Marta; range; crit.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 124 (ref. orig. descr.; range; crit.).—HELLMAYR, Nov. Zool., XX, 1913, 235 (Las Nubes; crit.; syn.).

Myrmopagis schisticolor sanctæ-martæ CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 615, in text (Santa Marta [region]; range; crit.; syn.).

Nine specimens: Valparaiso and Cincinnati.

In describing the male of this form Dr. Allen compared it with *M. longipennis*, but it turns out to be conspecific with *M. schisticolor* (Lawrence), a species which was long confused with *M. menetriesii* (D'Orbigny). The female he described independently as *Hylophilus brunneus*, and while this error of identification was known to the writer and others for some time before, it was not actually corrected in print until 1913, when Mr. Hellmayr published a note on the subject. As pointed out by this author in 1911, the present is a strongly marked form, the male differing conspicuously from that of true

schisticolor in the restriction of the black throat-patch, and the female being usually less brownish above. Immature males resemble adult females, but the upper parts are decidedly grayish. The species is known to range eastward into Venezuela.

A rare bird, detected in this region thus far only on the southwest slopes of the San Lorenzo at an altitude of from 4,000 to 5,000 feet, in the Subtropical Zone. Mr. Smith secured five specimens here, and the writer has taken eight more, all practically in the same place, that is, within a radius of two miles. It is an inhabitant of the heavy forest, keeping down among the smaller trees and undergrowth.

262. *Myrmopagis melæna melæna* (Sclater).

Five specimens: Fundación and Trojas de Cataca.

In the absence of any actual or presumptive evidence of intergradation between *Myrmopagis axillaris* and *M. melæna* it seems wiser to follow Mr. Ridgway in treating them as distinct species, both sexes of the two forms differing so widely in their characters *inter se*. But *M. melæna* is divisible into two geographic races, as recently pointed out by Dr. Chapman (*Bulletin American Museum of Natural History*, XXXVI, 1917, 375), and independently ascertained by the present writer, from a comparison of a series from Costa Rica with another from Colombia. Costa Rican males average blacker above, while females from that country are duller, less uniformly buffy below, with more dark suffusion on the throat and breast, than Colombian females. The two females from Fundación are like others from the interior of Colombia in this respect, but above they are noticeably paler. The species having been described from a "Bogotá" skin, the form inhabiting Central America and western Colombia will stand as *M. melæna albigula* (Lawrence).

Apparently a rare bird in this region, having been taken so far only in the lowlands at the southwestern end of the mountains. It was found in the forest among the tangled undergrowth and masses of vines.

263. *Dysithamnus olivaceus* (von Tschudi).

One specimen: Loma Larga.

Mr. Hellmayr (*Archiv für Naturgeschichte*, LXXXV, A, 1920, 85) has shown that von Tschudi's name *olivaceus* will have to be used for this form, instead of *semicinereus* of Sclater, recently employed

by the present writer. But we cannot at all follow Mr. Hellmayr in considering it a race of *D. mentalis*.

A pair were encountered on July 22, 1920, in the heavy forest near the eastern extremity of the Sierra Nevada range, at about 4,500 feet, and the male secured. The specimen agrees absolutely with a series from the Eastern Andes of Colombia. This capture is of great interest, constituting as it does the first record for this genus in the Santa Marta region, and considerably extending the known range of *D. olivaceus*. It appears to belong to the Subtropical Zone, here as elsewhere, in Colombia.

264. *Erionotus punctatus gorgonæ* (Thayer and Bangs).

Thamnophilus nævius (not *Lanius nævius* Gmelin) SALVIN and GODMAN, Ibis, 1880, 171 (Minca).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 197 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 161 (Bonda, Minca, Cacagualito, and Onaca).

Thamnophilus nævius atrinucha (not of Salvin and Godman) HELLMAYR, Abhand. K. Bayerischen Akad. Wiss., II Kl., XXII, 1906, 659 ("Santa Marta," in range).

Erionotus punctatus atrinucha RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 49 (Santa Marta localities and references).

Erionotus punctatus subcinereus TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 80 (Don Diego; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 87 (ref. orig. descr.).

Thamnophilus punctatus punctatus (not *Lanius punctatus* Shaw) CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 366, 367 (Santa Marta region; crit.).

Twenty-nine specimens: Bonda, Buritaca, Onaca, Don Diego, La Tigrera, Agua Dulce, Las Vegas, Minca, Fundación, and Loma Larga.

The determination of these specimens has involved a study of this entire group of conspecies, the results of which it seems desirable to place on record. The already large series from various regions in the collection of the Carnegie Museum, amplified by specimens kindly loaned by the Biological Survey and the Museum of Comparative Zoölogy, has afforded a satisfactory basis for such a study.

The type-locality of *Erionotus punctatus* (Shaw) is Cayenne. Birds from that locality agree with those from the Orinoco Valley in Venezuela and the Bogotá region of Colombia. The form is characterized by its relatively small bill (the culmen averaging about 17.5), and by

the purer gray back of the male, with little black showing through. The under parts are neutral gray, with the abdomen appreciably paler. The female is sepia above, the pileum and tail Brussels brown in sharp contrast, and dull buffy whitish below.

The Costa Rican and Panama birds, which were distinguished by Salvin and Godman under the name *atrinucha*, are readily recognizable by their larger bills, the culmen averaging about 19.5, although otherwise the size is the same. The under parts in the male are darker gray, with more or less black spotting or barring on the throat and breast; the upper parts, too, are darker, and the black is decidedly more extensive and prominent, sometimes prevailing over the gray. The female is much more deeply colored throughout than the same sex of *punctatus*; the pileum and tail are duller, scarcely in contrast with the back; the under parts are strongly washed with light brownish olive.

It would naturally be expected that Santa Marta specimens would be intermediate between these two perfectly distinct races, but such does not prove to be altogether the case. Considering males first, we find that the bill averages as large as in *atrinucha*, while the general coloration is paler gray than in *punctatus*, the entire under surface being of about the same shade as the abdomen in that form. Only in the amount of black mottling on the back is this form intermediate between *punctatus* and *atrinucha*. The series of females vary among themselves to such an extent that it is difficult to say just what should be considered the normal phase of coloration; they are all duller, however, than those of *punctatus*, but not so dark as a rule as those of *atrinucha*. It appears, therefore, that the Santa Marta form is worthy of recognition, and it was accordingly provided with a name by the writer in 1915. The description of *Thamnophilus gorgonæ* Thayer and Bangs (*Bulletin Museum of Comparative Zoölogy*, XLVI, 1905, 95) seemed at the time to preclude the possibility of such being the same form, but actual comparison proves otherwise. Males from Gorgona Island differ from Santa Marta examples only in having a little more gray feather-tipping on the forehead—a difference of no consequence. Females from the same locality are very uniform in being more richly colored, deeper buffy below, and more rufescent above, than the majority of Santa Marta examples of that sex, but they are matched so absolutely by several of our specimens that their separation would not be justified, at least on the basis of present material.

While this settlement of the case disposes conclusively of the difficulties encountered by Mr. Ridgway in attempting to include Colombian specimens under *atrinucha*, it raises another question in distribution not so readily settled. Dr. Chapman has shown that in western Colombia *atrinucha* is the form which occurs, ranging over to the Magdalena Valley. If, therefore, the birds from Gorgona Island, lying off the west coast of Colombia, and the Santa Marta region are to be considered the same—and there are certainly no sufficient grounds for their separation in the judgment of the writer—we are confronted by a most peculiar case of discontinuous distribution. The only explanation that seems pertinent is that this is a case of parallel development under similar environmental conditions.

This ant-shrike is strictly a Tropical Zone form, being found throughout the lowlands and semi-arid foothills up to 3,000 feet, but not regularly above 1,500 feet. It is most abundant in the forest of the lowlands at Don Diego on the north coast and about Fundación and Tucurínca to the southwest, but has been detected also at Valencia and Loma Larga, on the other side of the mountains. It is partial to dense thickets and masses of vines, is very tame, and is always found in pairs.

265. ***Thamnophilus nigriceps*** Sclater.

Twenty-seven specimens: Tucurínca, Tierra Nueva, Trojas de Cataca, and Fundación.

This species was described by Sclater in 1869 (*Proceedings Zoölogical Society of London*, "1868," 1869, 571) from a single unsexed "Bogotá" skin. Just about the same time Lawrence described a bird from Turbo, Colombia (*Proceedings Academy of Natural Sciences of Philadelphia*, "1868," 1869, 361), under the name *Thamnophilus virgatus*, which appears to be the same thing, or at least conspecific. There are a number of females in the present series, which correspond fairly well to Sclater's original description and later figure (*Catalogue of the Birds in the British Museum*, XV, 1890, pl. 12), except that the streaking on the pileum and under parts is much broader. The immature male appears to be very similar to the adult female, but the adult male is an entirely different looking bird, being black above and below, the flanks more or less tinged with slaty gray, and the outer greater under wing-coverts and the inner margins of most of the

remiges white or clouded with white. It appears, therefore, that this species was based on a female example of a form which has no very near relatives. Dr. Chapman and the writer, working independently and with different material, have reached the same conclusion up to this point, but specimens in the Carnegie Museum from the interior of Colombia strongly indicate the existence of a different race in that part of the country, which may or may not be typical *nigriceps*. In the former case the present form would stand as *T. nigriceps virgatus*.

Nos. 42,697, Fundación, August 9, and 49,502, Tucurínca, September 23, illustrate the transition from the juvenal to the first winter plumage of the male bird.

An abundant bird in the low heavy Tropical Zone forest lying between the edge of the foothills and the Ciénaga Grande, at least from Tucurínca on, its range doubtless extending as far north as Río Frio and out into the Magdalena basin. It frequents the dark cool depths of the forest, where it roams about in pairs or in company with other kinds, keeping low down in the undergrowth and shrubbery.

266. ***Thamnophilus radiatus nigricristatus* Lawrence.**

Thamnophilus radiatus (not of Vieillot) SCLATER, Cat. Am. Birds, 1861, 175 ("Santa Marta").—SCLATER and SALVIN, Proc. Zool. Soc. London, 1864, 355 ("Santa Marta").

Thamnophilus nigricristatus SCLATER, Cat. Birds Brit. Mus., XV, 1890, 209 "Santa Marta").

Thamnophilus doliatus (not *Lanius doliatus* Linnaeus) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 161 (Bonda).

Thamnophilus radiatus nigricristatus? RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 37 ("Santa Marta"; meas.; references).

Seventeen specimens: Mamatoco, Fundación, Dibulla, Tucurínca, and Loma Larga.

These agree closely with Lawrence's type in the collection of the American Museum of Natural History. The range of this form in Colombia is strictly confined to the coast region. Farther up the Magdalena River, according to Dr. Chapman, it is replaced by *T. radiatus albicans*, a much whiter form.

Mr. Smith secured two specimens of this species, one from Mamatoco (in the Carnegie Museum Collection), and another (a female) from Bonda, the latter inadvertently identified by Dr. Allen as *T. doliatus*. The writer has met with it only at Dibulla and Loma Larga (one specimen each), Tucurínca, and Fundación. In the last two

localities it was found in the lower edge of the foothills rather than in the alluvial plain, but was not abundant, only fourteen specimens in all being taken in about six weeks' collecting. Like the other members of the genus it is partial to thick undergrowth and masses of vines.

267. **Sakesphorus melanonotus** (Sclater).

Thamnophilus melanonotus SCLATER, Proc. Zool. Soc. London, 1855, 19, pl. 80 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.).—SCLATER, Edinburgh New Phil. Journ., n. s., I, 1855, 242 ("Santa Marta"; descr.; crit.).—SCLATER, Proc. Zool. Soc. London, 1858, 216 ("Santa Marta"; diag.; ref. orig. descr.).—SCLATER, Cat. Am. Birds, 1861, 175 ("Santa Marta").—GRAY, Hand-List Birds, I, 1869, 310 ("New Granada").—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 70 (range).—GIEBEL, Thes. Orn., III, 1877, 622 (references).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 205 ("Santa Marta"; descr.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 161 (Bonda); XXI, 1905, 289 (Bonda; descr. nest and eggs).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 191 (ref. orig. descr.; range).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 120 (Bonda; crit.; ref. orig. descr.).

Additional records: Tucurinca (Carriker).

Twenty-two specimens: Bonda, Mamatoco, Santa Marta, La Tigra, and Fundación.

Variation in the males affects the amount of black on the under parts, this color sometimes extending over the breast to include the upper abdomen. Again, the outer web of the outer rectrix, normally with a black subterminal spot, is in one specimen (No. 38,165, Mamatoco) entirely white. Immature males resemble the female at first, but soon begin to acquire the black pileum and back of the adult male.

The type of this species was a supposed Santa Marta specimen received by Sclater from Verreaux. Subsequently the species was traced to Venezuela, but few specimens seem to have been extant up to the time Messrs. Smith and Brown sent in a large number of skins. It is strictly a bird of the littoral part of the Tropical Zone, and in this region appears to be practically confined to the semi-arid lowlands around Santa Marta, back to the edge of the foothills, where it inhabits the thick scrub. One specimen, however, was secured at Fundación, and one at Tucurinca.

Mr. Smith sent in one nest, taken at Bonda on May 12, and thus

described by Dr. Allen: "The nest is similar in position, structure, and materials to the nests of *Formicivora* [*Microrhopias*] *intermedia*, but is of course larger, having a diameter across the rim of about $3\frac{1}{2}$ inches and a depth of $2\frac{1}{2}$. It is suspended by the rim to the fork of a small thorny branch, and is rather openly woven of some species of wire-like grass and coarser plant-stems, without lining, but decorated on the outside with scattered tufts of plant down.

"The eggs are white, with profuse markings of prune purple at the greater end, which in one egg nearly cover the surface, but are much more sparse on the other egg; the pointed half is without spots in both eggs."

268. *Sakesphorus pulchellus* (Cabanis and Heine).

Thamnophilus leucauchen (not of Sclater, 1855) SCLATER, Cat. Am. Birds, 1861, 174 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 171 (Santa Marta and Valencia).

Thamnophilus pulchellus VON BERLEPSCH, Ibis, 1881, 245, in text ("Santa Marta"; crit.).—SCLATER, Cat. Birds Brit. Mus., XV, 1890, 204 (Santa Marta and Valencia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1892, 201 (Santa Marta; descr. male).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 161 (Bonda and Cienaga).

Hypolophus canadensis pulchellus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, V, 1911, 33 (Santa Marta localities and references).

Thamnophilus canadensis pulchellus HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 119, in text (Santa Marta, in range; crit.).

Hypolophus pulchellus phainoleucus TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 80 (Rio Hacha; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 87 (ref. orig. descr.).

Thirty-two specimens: Bonda, Cienaga, Gaira, Punto Caiman, Trojas de Cataca, Tucurinca, Fundación, and Rio Hacha.

It is a mistake, in the writer's judgment, to treat this form as a subspecies of *S. canadensis*, from which it differs in several important particulars. Moreover, as will be shown in another connection, their respective ranges approach very closely, if they do not actually overlap, with no signs of intergradation. *S. pulchellus* is a species of the littoral Tropical Zone of Colombia and Venezuela. It was described from Cartagena in the former country, and soon thereafter recorded from the Santa Marta region by Sclater. Specimens from near the type-locality in the collection of the Carnegie Museum agree with

those from the vicinity of Santa Marta, as well as with a series from the Magdalena Valley and Rio Sinu, although there is, to be sure, a great deal of variation. But Rio Hacha specimens, upon which the subspecific name *phainoleucus* has been based, present certain peculiarities. In the males the black area of the throat and breast is more restricted, leaving the throat superficially white in most examples; there is more white on the forehead, sides of the pileum, and sides of the head in general, so that these parts, instead of being black, freckled with white, are white, speckled with black; the white external margins of the primaries are more pronounced; the white tips to the rectrices are perhaps a little larger; and the upper parts in general average paler, although there is considerable variation here. Were these characters more constant it would be feasible to distinguish an eastern form, but there are too many exceptions. Thus, a male in fresh plumage from Lorica, Bolivar, Colombia (No. 52,678) is an exact counterpart of the type of *phainoleucus*, and the examination of the series in the collection of the American Museum of Natural History shows that there is a great deal of variation. Females seem to offer better characters for separation, and it may be that eventually it may be possible to maintain *phainoleucus* on such grounds. All the Rio Hacha females, together with two from Venezuela, are paler, more buffy, less rufescent in general coloration, with the throat and sides of the head nearly white, while the dusky streaking on the breast and lower throat is nearly obsolete. But until a larger series is available we prefer to ignore the supposed form.

This ant-thrush is found sparingly over the whole of the semi-arid lowlands from Santa Marta to Fundación, being commonest along the shores of the Ciénaga Grande. It is perhaps more numerous in the Rio Rancheria-Rio Cesar Valley, and at Rio Hacha it was fairly common in the thick scrub. It is always found in open woodland or scrub, never in the heavy forest. The birds are very tame, go about in pairs, and are rather sluggish in their movements.

269. ***Taraba transandean granadensis*** (Cabanis).

Two specimens: Tucurínca.

This form, which Mr. Ridgway (without, however, having examined specimens) doubtfully includes as a synonym of *T. transandean transandean*, is a well differentiated subspecies, as shown by a direct

comparison of a series of specimens of both forms. Not only is *granadensis* smaller, but also the flanks in the male are paler, and there is much more white on the tibiæ and crissum. Females of the two respective races differ even more strikingly, those of *granadensis* being distinguishable at a glance by the decidedly paler color of the rufous parts, both above and below. (Compare, in this connection, Menegeaux and Hellmayr, *Bulletin Société Philomathique de Paris* (9), VIII, 1906, 25, and Hellmayr, *Proceedings Zoölogical Society of London*, 1911, 1157).

This handsome large ant-thrush was met with only in the low, swampy forest below Tucurinca, where three individuals were seen and two secured, both males. It doubtless inhabits the swampy forest contiguous to the Cienaga Grande and the Magdalena River. It is partial to tangled undergrowth and masses of vines, although it is often seen higher up in the trees than many others of this family are accustomed to go.

Family PTEROPTOCHIDÆ. TAPACULOS.

270. *Scytalopus sanctæ-martæ* Chapman.

Scytalopus sylvestris (not of Taczanowski) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 101 (San Francisco; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 162 (Bangs' reference).

Scytalopus latebricola (not of Bangs) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 162, excl. syn. (Valparaiso).

Scytalopus sanctæ-martæ CHAPMAN, Auk, XXXII, 1915, 418. (Valparaiso [type-locality] and San Francisco; orig. descr.; type in coll. Am. Mus. Nat. Hist.; crit.), 422 (diag.), 423 (meas.).—HELLMAYR, Orn. Monatsber., XXX, 1922, 54, in text (Santa Marta localities; crit.).

Five specimens: Cincinnati and Pueblo Viejo.

A single not fully adult bird taken by Mr. Brown at San Francisco was provisionally referred to *S. sylvestris* by Mr. Bangs. Dr. Allen recorded two specimens sent in by Mr. Smith from Valparaiso as *S. latebricola*. Upon the receipt of the above examples, taken at the same locality, it at once became evident that they had nothing to do with the latter species, and further comparison indicated that they could not safely be referred to any other described form. It so happened that Dr. Chapman, after a careful survey of the entire group, had independently arrived at the same conclusion as the writer, and his

paper on the genus, appearing just at this time, became a welcome contribution towards a better understanding of this exceptionally difficult group.

The relationships of this species, as pointed out by Dr. Chapman, are clearly with *S. micropterus micropterus* of Ecuador and Colombia, with which it agrees in slaty gray back and breast, white vertical spot, etc. It differs from that species in its generally lighter coloration, paler feet (in the skin), and smaller size. In juvenal dress, illustrated by No. 42,474, Cincinnati, July 10, it is much less rusty below, the throat and breast especially. Two females (probably immature) from Pueblo Viejo are washed with brown above and are much paler gray beneath, thus suggesting *S. sylvestris*; the vertical spot is reduced to a mere trace, and the tail is brown, not dark slate as in the male. It is hardly possible that these two specimens would belong to another species, however. Measurements of the four adults are subjoined.

No.	Sex.	Locality.	Date.	Wing.	Tail.	Bill.	Tarsus.
42473 ¹	♂	Cincinnati	July 10, 1913	50	31	13	19
44960 ¹	♂	Pueblo Viejo	March 13, 1914	52		14	20
44967 ¹	♀	Pueblo Viejo	March 14, 1914	51	36	12.5	18.5
63043 ²	♀	Pueblo Viejo	March 14, 1914	50	35	13	20

Not a rare bird on the slope of the San Lorenzo, but a very difficult one to secure. It is a Subtropical Zone form, ranging from about 4,000 up to 6,000 feet, and is found only in the heavy forest, almost always in some dark, tangled ravine. In the Sierra Nevada it was found to be fairly common in the same tract of woodland at Pueblo Viejo in which *Grallaria regulus carmelita* was taken. It keeps on the ground, and has a weak little call-note, frequently uttered, by which its presence may easily be detected, but it can slip away in the most astonishing manner. Time after time the writer has been within ten feet of an individual, only to have it slip off as completely as if it had vanished into the air.

271. *Scytalopus latebricola* Bangs.

Scytalopus latebricola BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 101 (Paramo de Chiruqua [type-locality] and Paramo de Macotama; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—SHARPE, Hand-List Birds,

¹ Collection Carnegie Museum.

² Collection Academy of Natural Sciences of Philadelphia.

III, 1901, 6 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1068 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 182 (ref. orig. descr.; range).—CHAPMAN, Auk, XXXII, 1915, 416 (Paramo de Chiruqua and Paramo de Macotama; crit.), 422 (diag.), 423 (meas.).
Scytalopus latebricola latebricola HELLMAYR, Orn. Monatsber., XXX, 1922, 56, in text (Santa Martan localities; crit.).

Sixteen specimens: San Lorenzo, Sierra Nevada de Santa Marta (6,000 feet), Cerro de Caracas, Macotama, and Paramo de Mama-rongo.

This fine series amply confirms the characters assigned to the species, heretofore known only from the type-series, as given in the original description and later elucidated by Dr. Chapman. It is very distinct from *S. meridanus* Hellmayr, as represented by Venezuelan specimens (identified by Mr. Hellmayr) in the collection of the Carnegie Museum, differing in larger size, higher, more compressed bill, and darker coloration, with practically no white on the under parts. The series includes two young birds from Cerro de Caracas, March 30, moulting into the adult plumage. In juvenal dress the species is apparently brown, each feather black centrally, giving a squamate or barred appearance, as in *S. argentifrons*. Some of the July adults have the feathers of the breast worn to shreds.

This species was discovered by Mr. Brown on the Paramo de Chiruqua and Paramo de Macotama, at altitudes of from 11,000 to 12,000 feet. The explorations of the writer have shown that it is not strictly confined to the Temperate Zone, however, but is found throughout the Sierra Nevada from this region down to 8,000 feet at least, wherever tangled thickets or woodland occurs. It has been traced westward to the San Lorenzo, where it ranges still lower down, being fairly common above 7,000 feet, in the more open woodland and dense thickets. Like the other members of the genus, it keeps on or near the ground, and is most difficult to secure.

Family COTINGIDÆ. COTINGAS.

As pointed out by Mr. Ridgway, this family is certainly a very heterogeneous assemblage, and its exact limits uncertain. The character of the tarsal envelope, upon which he mainly relies for its discrimination from related groups, appears to vary unduly, and that such has any more taxonomic significance in the present case than has

the presence of a spurious outer primary in the Vireonidæ may well be doubted. Dr. Chapman has shown (*Bulletin American Museum of Natural History*, XXXVI, 1917, 458) that the character in question is variable even in a single species. It is certainly difficult to determine in many of the smaller species, particularly from dried specimens, and there is no assurance that further studies will not result in the breaking up of other genera which are at present supposed to be fairly homogeneous, if this character is to be made the criterion. Although naturally hesitating to express an opinion at variance with that of such a distinguished authority as Mr. Ridgway, who has moreover given the subject so much careful study, I have received the impression that when the line between the Cotingidæ and Tyrannidæ comes to be finally drawn it will not be in such a way as to divide such an obviously natural genus as *Elania*, for example, or to relegate *Microticcus* and *Tyrannulus* to the former rather than to the latter group.—W. E. C. T.

272. *Tityra semifasciata columbiana* Ridgway.

Tityra personata (not of Jardine and Selby) SCLATER, Proc. Zool. Soc. London, 1857, 70 ("Santa Marta"); 1860, 295 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 169 (Minca).

Tityra semifasciata (not *Pachyrhynchus semifasciatus* Spix) SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 330 ("Santa Marta" and Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 158 (Pueblo Viejo).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 154 (Minca, Cacagualito, and Valparaiso).

Tityra semifasciata columbiana RIDGWAY, Proc. Biol. Soc. Washington, XIX, 1906, 119 (La Concepción; orig. descr.; type in coll. U. S. Nat. Mus.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 868 (diag.; range; references).—HELLMAYR, Proc. Zool. Soc. London, 1911, 1142 ("Santa Marta," in range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 321, in text (Santa Marta, Valparaiso, Cacagualito, and Minca; meas.; crit.); XXXVI, 1917, 489 ("Santa Marta"; crit.).

Additional records: Chirua (Brown); La Tigra (Carriker).

Twenty-one specimens: Minca, Onaca, Valparaiso, Cincinnati, Las Vegas, Fundación, and Pueblo Viejo.

In describing this form Mr. Ridgway compared it with true *semifasciata* (type-locality Pará, Brazil), to which it appears to be most closely allied. Adult males, indeed, are sometimes very difficult to distinguish, there being no absolutely infallible characters for their separation. But as a rule there is more white on the tail in *semifas-*

ciata than in *columbiana*, the inner web of the outer rectrix often being wholly white in the former, while in the latter there is always at least a subterminal spot of black. The black frontal area averages broader, and the bill a trifle stouter, in *semifasciata*. Females afford much better characters for separation, the upper surface being browner (the pileum especially), less grayish in *columbiana* than in *semifasciata*. It would appear that far too much importance has been attached to the color-pattern of the tail in discriminating certain members of this group, and this character must be used with caution. Examination of the present fine series discloses the existence of a great deal of variation in this respect. In some males there is merely a spot of black (not touching the shaft) on the inner web of the outer rectrix toward the tip, and often this spot is asymmetrically developed on the two sides. From this condition there is every gradation up to birds showing a broad black subterminal band, equally developed on all the rectrices. Such examples correspond in this respect to the description of *T. semifasciata esmeralda* Chapman (*Bulletin American Museum of Natural History*, XXXIII, 1914, 320), which, were it dependent on this character alone, could scarcely be considered valid. Precisely the same range of variation obtains in the Costa Rican form, *T. semifasciata costaricensis*, and the only observable difference between males of this latter form and of *columbiana* is the whiter under surface of the latter, evident on comparison in series. Females of the two forms, however, are very different, as indicated by Mr. Ridgway. One bird sexed as a female (No. 38,114, Minca, August 19, 1911) has the inner web of the two outer rectrices pure white, this being an extreme case. Another specimen shot July 21 is in juvenal dress, with short wings and tail.

A fairly common bird over the western lowlands, as well as the foothills and lower slopes of the north and east sides of the mountains. It is essentially a Tropical Zone species, going up only to about 5,000 feet, and probably wanders about considerably except in the nesting season, breeding in the lower altitudes. It is much addicted to perching on tall dead trees.

273. *Erator albitorques* (Du Bus).

Tityra albitorques SALVIN and GODMAN, Ibis, 1880, 169 (Valencia).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 332 (Valencia).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 155 (Salvin and Godman's reference).

Erator albitorques RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 863 (Valencia, in range; references).

Four specimens: Tucurínca and Fundación.

There are one adult and one immature male, and two females. The adult male differs from Central American skins (*Erator fraseri*) in being much paler gray above and especially below, where, indeed, it is nearly white. The females are strikingly different from Central American birds of the same sex, the back having scarcely any brown wash, being mostly dull gray, while the rusty white frontlet is much wider, the superciliary region more broadly chestnut, and the scapulars, secondaries, and upper tail-coverts are paler, more whitish. Like the male, the under parts in general are decidedly whiter, less grayish, and the tail is sharply bicolor, being white at the base, with a definite black area beyond, and the extreme tip white. These differences impress one as being of specific value.

Mr. Hellmayr (*Proceedings Zoölogical Society of London*, 1911, 1142) finds that birds from western Colombia are identical with those from northern Brazil and Peru, the latter being typical *albitorques*. In addition to the above, we have one male from Gamarra, in the Magdalena Valley, and there is a male from Daule, Guayas, Ecuador, in the collection of the American Museum of Natural History, both of which are precisely similar to the Santa Marta birds.

The young male (No. 49,728, Fundación, October 19) has a pale under mandible, and is darker gray above than the adult, while the head is marked like that of the female, with some gray feathers coming in.

This species is apparently confined to the Tropical Zone on the southern and southwestern side of the Sierra Nevada. It was met with (by the writer) only in the region about Tucurínca and Fundación, where four specimens in all were secured. Simons secured a pair at Valencia, as duly recorded by Salvin and Godman.

274. *Platypsaris homochrous canescens* Chapman.

Hadrostomus homochrous (not *Pachyrhamphus homochrous* Sclater, 1859) SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 334 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 154 (Cacagualito and Bonda).

Platypsaris homochrous RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 859 (Santa Marta localities and references).—HELLMAYR, Proc. Zool. Soc. London, 1911, 1143 ("Santa Marta," in range).

Platypharus homochrous canescens CHAPMAN, Bull. Am. Mus. Nat. Hist., XXI, 1912, 155 (Cacagualito [type-locality] and Bonda; orig. descr.; type in Am. Mus. Nat. Hist.); XXXVI, 1917, 490, in text (crit.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 245 (ref. orig. descr.).

Thirteen specimens: Bonda, Cacagualito, Mamatoco, Fundación, Don Diego, and Dibulla.

This is a light-colored race of *P. homochrous*. The series includes three immature males in transition plumage, taken at such diverse dates as January 26, April 26, and October 15.

A Tropical Zone form, apparently confined to the lowlands and lower edge of the foothills. It is rare in the drier portion of the lowlands, but is commoner at Don Diego and Fundación. It is usually seen in the more open parts of the forest and rather high up in the trees. Mr. Smith sent in but four specimens in all, and Sclater recorded a single example from this region secured by Joad many years ago.

275. *Pachyrhamphus albogriseus ornatus* Cherrie.

Pachyrhamphus albo-griseus (not of Sclater) VON BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. London, "1883," 1884, 559 ("Santa Marta"; crit.).

Pachyrhamphus cinereiventris (not of Sclater) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 154, part (Valparaiso).

Pachyrhamphus albo-griseus albo-griseus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 836 ("Santa Marta"?, in range).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 91 ("Sierra Nevada de Santa Marta"?).

Pachyrhamphus ornatus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 842 (Valparaiso; crit.).

In the paper above cited Messrs. Hellmayr and von Seilern have given us a very clear idea of the characters of the three recognized races of *Pachyrhamphus albogriseus*. They include the Santa Marta region provisionally within the range of the typical form. There is a single female specimen in the collection of the American Museum of Natural History (No. 72,779, Valparaiso, April 1, 1899), inadvertently recorded by Dr. Allen under *P. cinereiventris*, which agrees in general with examples from Costa Rica and Chiriqui, referable of course to *ornatus*. They all differ conspicuously from females from the northern part of Venezuela in their darker, more greenish, less yellowish under parts, and darker-colored pileum and nape. In fresh plumage the external edgings of the remiges appear to be darker, more rusty.

P. albogriseus appears to be rare in collections, and its faunal affinities are not entirely clear. We refer it here to the Piedmont belt of the Tropical Zone, but it is possible that it may belong properly to the Subtropical.

276. *Pachyrhamphus polychropterus cinereiventris* Sclater.

Pachyrhamphus cinereiventris SCLATER, Cat. Am. Birds, 1862, 242 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.).—SCLATER and SALVIN, Proc. Zool. Soc. London, 1864, 361 ("Santa Marta").—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 56 (range).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 344 (Santa Marta; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1890, 127 ("Santa Marta." in range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 154, part (Bonda and Cienaga; crit.); XXI, 1905, 287 (Cacagualito and Bonda; descr. nest and eggs).—CHERRIE, Mus. Brooklyn Inst. Sci. Bull., I, No. 8, 1906, 4, in text (Santa Marta [region]; crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 316 (ref. orig. descr.; range).

Tityra cinereiventris GRAY, Hand-List Birds, I, 1869, 369 ("Santa Marta," in range).

Pachyrhamphus niger (not *Pachyrhynchus niger* Spix) SALVIN and GODMAN, Ibis, 1880, 169 (Santa Marta).

Pachyrhamphus niger cinereiventris HELLMAYR, Nov. Zool., XIII, 1906, 27 ("Santa Marta"; crit.).

Pachyrhamphus polychropterus cinereiventris RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 827, 831 (Santa Marta localities and references; meas.; crit.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 89 (Santa Marta; crit.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 492, in text (Bonda; crit.).—BANGS and PENARD, Bull. Mus. Comp. Zool., LXIV, 1921, 390 (Santa Marta localities; crit.).

Sixteen specimens: Bonda, Mamatoco, Tucurinca, Fundación, and Valencia.

There has been considerable discussion over the status and name of this form, described by Sclater many years ago from an alleged Santa Marta specimen received from Verreaux. Mr. Hellmayr examined Sclater's type, and found it to agree with a series from Trinidad and Venezuela, to which he accordingly applied the name *cinereiventris*. Exception was promptly taken to this application of the name by both Mr. Cherrie and Mr. Ridgway, who pointed out that the "common run" of Santa Marta specimens were readily to be distinguished from Venezuelan and Trinidad skins by the much grayer coloration of the males. More recently Mr. Hellmayr has suggested that perhaps Scla-

ter's type did not actually come from Santa Marta at all, in which case the form in question would require a new name.

The series studied in this connection entirely confirms the distinctness of the Santa Marta and Venezuelan races respectively. Males from the former region agree with those from Costa Rica in being uniform neutral gray below, but an occasional individual in very high plumage may show some black shading on these parts. Now, it is only necessary to suppose that Sclater's type happened to be a bird in this high plumage, which is practically indistinguishable from the general run of specimens from Trinidad and Venezuela. It is true that among the birds from the latter region there are some with gray under parts, but almost invariably such light-colored examples show evidences of immaturity. Santa Marta and Costa Rican females are decidedly yellow below as compared with females from Trinidad and Venezuela, which are duller colored. In this view of the case the name *cinereiventris* can be retained for the Santa Marta form. The proper name which the Trinidad and Venezuelan form should bear is uncertain: Messrs. Bangs and Penard, in their recent critical review of the races of this species, provisionally adopt for it the name *tristis* of Kaup.

The series includes two birds in juvenal dress, with short wings and tail, taken at Bonda on October 21, 1899.

Simons secured two specimens of this bird in the vicinity of Santa Marta, and no less than twenty-four specimens were sent in by Mr. Smith, all from Bonda and Cienaga. Apparently Mr. Brown did not meet with it at all, and barring a single female shot at Mamatoco on September 7, 1911, the writer failed to find it until his last trip to the Fundación region in 1915. First a female was taken at Tucurinca, and afterwards two adult males, a young male, and a female at Fundación. The birds frequent the more open forest, where they keep rather high up in the trees. It is of course strictly a species of the Tropical Zone.

Dr. Allen describes two nests received from Mr. Smith, collected May 20 and June 1 respectively, as "very massive, placed in a stout upright fork of a shrub or tree, and composed of dry brown grass, plant stems, strips of barks, etc., mixed with much yellowish plant down. They are very deep, open at the top, with the nest cavity extending nearly to the bottom of the nest, which may have a depth (vertical length) of 9 or 10 inches, with the cavity extending to within

an inch or an inch and a half of the bottom, and without any lining of soft material. One of the nests is much more bulky than the other, having a transverse diameter of 7 inches, instead of only 5, as in the other.

"The [three] eggs are grayish white, thickly streaked, blotched and spotted with dark lavender, and with a few overlying streaks and spots of dark chocolate. In one egg the streaks and spots are more sharply defined and darker than in the other two. Size, 19×44 ."

277. *Pachyrhamphus cinnamomeus magdalenæ* Chapman.

Fifteen specimens: Fundación and Tucurínca.

The peculiarities of these specimens, which are superficially much like females of *P. rufus*, were noted soon after their receipt, and their resemblance to *P. cinnamomeus* remarked. Shortly thereafter Dr. Chapman (*Bulletin American Museum of Natural History*, XXXIII, 1914, 629) described a bird from Algodonal, Magdalena River, under the name *Pachyrhamphus magdalenæ*, which was obviously the same thing, and this identity has since been confirmed by actual comparison. The species belongs to the *P. cinnamomeus* group, in which the sexes are alike; it is much paler than that form, however, especially below, the abdomen being nearly white in some specimens. Males are of course very different from the same sex of *P. rufus*, but females are very similar at first glance. They may invariably be distinguished by the pattern of the brown margin of the outer webs of the remiges, which is *not* sharply defined from the dusky inner portion, as in *P. rufus*. They are also a little larger than the same sex of that species.

278. *Pachyrhamphus rufus* (Boddaert).

Pachyrhamphus griseus SCLATER, Proc. Zoöl. Soc. London, 1857, 18 ("Santa Marta").

Pachyrhamphus cinereus SCLATER, Proc. Zoöl. Soc. London, 1857, 75 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1862, 241 ("Santa Marta").—SCLATER and SALVIN, Proc. Zoöl. Soc. London, 1864, 361 ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 341 ("Santa Marta").—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 838 ("Santa Marta," in range; references).

Twelve specimens: Don Diego, Tucurínca, Fundación, and Loma Larga.

Mr. Hellmayr (*Abhandlungen der Königlich Bayerischen Akademie der Wissenschaften*, II Kl., XXII, 1906, 669) has shown that *Musci-*

capa rufa of Boddaert, 1783, which has page priority over *Pipra cinerea* of the same author, pertains to the female of the species which in later literature has passed under the name *Pachyrhamphus cinereus*, necessitating a shift in the nomenclature. Santa Marta birds are practically indistinguishable from typical Cayenne specimens, but there is considerable variation in the extent and intensity of the buffy rufous shading of the under parts in the female.

This species was not uncommon at Fundación and Tucurínca, as birds of this family go, seeming to prefer scattered trees and tall shrubbery to the deeper forest. Only one specimen was taken at Don Diego and one at Loma Larga, and none at all in the vicinity of Santa Marta.

279. *Attila parvirostris* Allen.

Attila parvirostris ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 153 (Minca [type-locality] and Valparaiso; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—SHARPE, Hand-List Birds, III, 1901, 168 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1074 ("Santa Marta," in range; ref. orig. descr.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 803 (diag.; range; ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 318 (ref. orig. descr.; range).

Nine specimens: Minca, Agua Dulce, Don Diego, and Trojas de Cataca.

Scarcely any two of this series are alike, but the range of variation in this species, although great, is paralleled in other species of the genus. The type of the species, which has been examined in this connection, has rather more greenish suffusion on the breast and sides than any of the above, but it is certainly a mistake to describe the species as "olivaceous" below. In the majority of the specimens the lower throat and breast are more or less strongly washed with orange citrine, but in one specimen (No. 42,208, Minca, June 16) these parts are flammulated with buffy citrine, dusky, and white. Two other specimens from Minca (June 16 and 21) are apparently young birds, having very little buffy suffusion on the breast, white predominating. They agree with the adults from the same locality, however, in the color of the tail, which is antique brown, while in the Don Diego and Trojas de Cataca skins the color is Brussels brown or raw umber. The latter were taken in October and January, whereas the Minca specimens were all shot in June. Dr. Allen in describing this species

remarks on this difference, suggesting that it may be of specific value, but after examining his specimens in connection with ours we think it is mainly seasonal. This is indicated by No. 44,573 (Don Diego, January 28), which has rectrices of both colors, the new ones being the darker. The color of the bill seems to vary also with the season, being darker in June specimens.

The type-specimen of this *Attila* was taken at Minca by Mr. Smith, and two other examples at Valparaiso (now Cincinnati). It was not detected by the writer so high up as the latter place, however, although found on all sides of the Sierra Nevada, from sea-level up to 2,500 feet. It seemed to be most numerous at Minca, but was a rare bird everywhere. It has a loud, very characteristic call-note, which is easily recognized and would be remarked at once were the bird present. It was found only in the forest, usually among the middle branches of the trees, neither very high nor low.

280. *Attila rufipectus rufipectus* Allen.

Attila rufipectus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 153 (Las Nubes; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—SHARPE, Hand-List Birds, III, 1901, 169 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1074 ("Santa Marta," in range; ref. orig. descr.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 803 (diag.; range; ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 319 (ref. orig. descr.; range).

The type-specimen of this species was collected by one of Mr. Smith's party at Las Nubes (altitude 5,000 feet) on December 1, 1898, and so far remains unique. In the color of the upper surface it is close to some specimens of *A. parvirostris*, but is more rufescent, with the rump darker; the under parts, however, are very different, being decidedly deeper in color, only the chin and abdomen being paler, and the chin and throat with barely indicated streaks. The wings and tail are about the same. More recently Mr. Cory (*Field Museum Ornithological Series*, I, 1913, 289) has described an *Attila* from the State of Zulia, Venezuela, which he considers to be a subspecies of the present form. In view of the proximity of the locality from which this form comes, and of the great degree of individual variation known to obtain in the present group, it would be well to accept this disposition of the Venezuelan bird with caution, pending the receipt of additional material.

The indications are that *A. rufipectus rufipectus* takes the place of *A. parvirostris* in the Subtropical Zone of the Santa Marta region.

281. *Attila idiotes* Todd.

Attila idiotes TODD, Proc. Biol. Soc. Washington, XXIX, 1916, 96 (Fundación; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARÍA, Bol. Soc. Cien. Nat. Inst. La Salle, IV, 1916, 117 (reprint orig. descr.).

One specimen: Fundación.

Description.—Adult male: pileum and hindneck dark citrine, the former with narrow dusky shaft-streaks; back and scapulars Dresden brown, passing into yellow ocher on the rump and into primuline yellow on the upper tail-coverts; tail antique brown, deepening into raw umber terminally; wings dusky, the primaries very narrowly and indistinctly margined externally with grayish, the secondaries broadly edged externally with dull antique brown, and the lesser wing-coverts, with the tips and outer margins of the median and greater series, also of this color; inner webs of all the remiges margined with pale buffy white towards their bases; sides of the head and neck dark citrine, with an indistinct superciliary stripe of Martius yellow; chin, throat, and malar region pale lemon yellow, flammulated with dusky warbler green; breast similar but duller, with the streaking broader and less distinct; abdomen white, the sides, and particularly the flanks, washed with yellow ocher; crissum white, tinged with pale buffy yellow; under wing-coverts buffy yellow; "iris reddish brown; feet plumbeous; bill dark horn-color apically, flesh-color basally." Wing, 89; tail, 72; bill, 20; tarsus, 22.

Unfortunately only a single specimen was secured, but this cannot be referred to any known species, and it has become necessary to describe it as new. It seems to be most nearly related, however, to *A. citreopygus citreopygus*, from which it differs in its smaller bill, brighter coloration, with greenish yellow (instead of grayish white) chin and sides of head, paler brown back, and more restricted yellow rump-patch. In none of these characters is it approached by any individuals in the series of *citreopygus* examined, variable though they are in many respects, and we are therefore apparently justified in considering it to represent a new and distinct species.

The single individual secured was taken at Fundación on October 19, 1915, beside a faint trail leading through the open forest near the

village. It seemed to be feeding on the fruit of a certain tree there, in company with *Platyptaris homochrous canescens* and *Erator albitorques*. Although a sharp watch was kept, no others were seen. The species of this genus are usually quite tame and easily approached, being rather sluggish in their habits. Their song is a loud peculiar note, easily recognized, and at once indicates the presence of the bird.

282. **Euchlornis aureopectus decora** (Bangs).

Pipreola aureopectus decora BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 98 (Chirua; orig. descr.; type now in coll. Mus. Comp. Zool.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 155 (Valparaiso and El Libano).—DUBOIS, Syn. Avium, II, 1903, 1074 ("Santa Marta," in range; ref. orig. descr.).

Pipreola decora SHARPE, Hand-List Birds, III, 1901, 173 (ref. orig. descr.; range).

Euchlornis aureopectus decora TODD, Ann. Carnegie Mus., VIII, 1912, 211 (El Libano, Cincinnati, Las Taguas, and Valparaiso [Cincinnati]; meas.; crit.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 94, 95, in text (Sierra Nevada de Santa Marta; crit.; ref. orig. descr.).

Euchlornis decora BRABOURNE and CHUBB, Birds S. Am., I, 1912, 322 (ref. orig. descr.; range).

Ten specimens: El Libano, Valparaiso, Cincinnati, Las Taguas, Las Vegas, San Miguel, and Sierra Nevada de Santa Marta (6,000 feet).

As shown by a comparison of measurements, this is a small form of *E. aureopectus*, and may further be readily distinguished by the presence of a post-auricular band of yellow, as pointed out by the original describer.

This well-marked race was described from a pair of birds taken by Mr. Brown near Chirua, at an altitude of about 7,000 feet. Mr. Smith secured a series at Valparaiso (Cincinnati) and El Libano. It is a characteristic bird of the Subtropical Zone, inhabiting the heavy forest between 4,500 and 7,000 feet. It is a very quiet bird, and keeping as it does rather high up in the trees, where it is inconspicuous because of its protective coloration, it is readily overlooked by a collector, and is probably more abundant than one would suspect.

283. **Heliochera rubrocristata** (D'Orbigny and Lafresnaye).

Heliochera rubrocristata SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 390 (Sierra Nevada de Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 98 (Paramo de Chiriqua and Paramo de Macotama).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 152 (Sclater's and Bangs' references).

Fourteen specimens: Cerro de Caracas, Macotama, Paramo de Mararongo, and Paramo de Chiriqua.

The sexes are alike in this species, contrary to Sclater's description. Two immature birds (April 4), however, have the abdomen suffused with pale yellow, and the tertials and greater wing-coverts edged externally with white. In the younger of the two the crest is merely indicated by a few lengthened brownish feathers; in the other the long crest-feathers are being assumed by moult. In both the emargination of the outer primaries is scarcely evident.

This species was originally described from Bolivia, and it is possible that these northern birds may prove to be different. D'Orbigny's plate represents a brighter-colored bird, but may be inaccurate, as other of his plates are known to be. He gives the tail as being 65 mm. long, but this too is probably an error for 85.

The writer found this curious cotinga first on the Cerro de Caracas, from 9,000 to 11,000 feet, where it was not uncommon. Later it was met with in the valley above Macotama, from 9,000 up to about 12,000 feet, but no higher. Mr. Brown claims to have found the species up to 15,000 feet, but this is almost certainly a mistake. It is of course a species of the Temperate Zone, here as elsewhere throughout its extensive Andean range. It is usually found in pairs or small flocks, not in the deep forest, but in scattered trees and shrubbery. It does not seem to be very shy, but for some reason is very hard to kill at the range usual for other birds of the same size.

Family PIPRIDÆ. MANAKINS.

284. *Schiffornis amazonus stenorhynchus* (Sclater and Salvin).

Heteropelma verapacis (not of Sclater and Salvin) ALLEN, Bull. Am. Mus.

Nat. Hist., XIII, 1900, 155 (Bonda and Cacagualito; crit.; plum.).

Scotothorus verapacis SHARPE, Hand-List Birds, III, 1901, 159 ("Santa Marta," in range).

Scotothorus amazonus stenorhynchus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 762 (Santa Marta localities and references; plum.).

Scotothorus turdinus stenorhynchus HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 87 ("Sierra Nevada de Santa Marta," in range). —HELLMAYR, Wytzman's Gen. Avium, part 9, 1910, 27 ("Santa Marta," in range). —CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 488 ("Santa Marta").

Twelve specimens: Bonda, Las Vegas, Don Diego, Pueblo Viejo, and Tucurinca.

These agree well with practically topotypical specimens from Venezuela, and differ from *S. amazonus amazonus* as said by Mr. Ridgway, whose arrangement of this genus we follow in the absence of other satisfactory material for comparison.

A bird of the foothills, rarely straggling down to the littoral zone, and ranging upward to 3,000 feet at least, seeming to prefer the more humid sections. Mr. Smith took it at Bonda, but the writer has never met with it on the north side of the San Lorenzo. It is a bird which keeps on or near the ground in the heavy forest, and is very quiet, shy, and inconspicuous. If it has a call-note this has not been heard.

285. *Pipra erythrocephala erythrocephala* (Linnæus).

Pipra auricapilla (not of Lichtenstein) SALVIN and GODMAN, Ibis, 1880, 169 (Minca).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 296 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 156 (Bonda, Onaca, Minca, Agua Dulce, Las Nubes, and Valparaiso).

Pipra erythrocephala HELLMAYR, Ibis, 1906, 20 ("Santa Marta"; references).

Pipra erythrocephala erythrocephala RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 748 (Santa Marta localities and references).

Thirty specimens: Onaca, Cincinnati, La Tigrera, Las Vegas, Las Taguas, Minca, and Don Diego.

These are indistinguishable from specimens from Venezuela and Trinidad.

A Tropical Zone form, inhabiting the foothills and lower mountain slopes from 1,000 up to 4,500 feet, dropping down to sea-level in the humid forest of the northeast coast. It was particularly abundant at Las Vegas at about 3,500 feet. It is usually met with in small bands, the males often flocking by themselves, presumably while the females are incubating. The birds keep rather high up in the trees, making short rapid flights from branch to branch, with a whirring noise, then sitting perfectly still for a minute or so.

286. *Chiroxiphia lanceolata* (Wagler).

Chiroxiphia lanceolata SALVIN and GODMAN, Ibis, 1879, 202 (Manaure).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 309 (Manaure).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 155 (Bonda, Minca, and Cacagualito); XXI, 1905, 288 (Bonda; descr. nest and eggs).—MILLER, Bull. Am. Mus. Nat.

Hist., XXIV, 1908, 334 ("Santa Marta").—HELLMAYR, Wytsman's Gen. Avium, part 9, 1910, 19 ("Santa Marta," in range).

Chiroprion lanceolata RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 737 (Santa Marta localities and references; crit.).

Additional records: Fundación (Carriker).

Twenty-six specimens: Bonda, Minca, Cacagualito, Mamatoco, and La Tigra.

The series includes three young males in immature (first winter) dress, dated September 15, November 4 and 15. A specimen taken September 7 appears to be moulting into the black and blue plumage. On the other hand, there are two black and blue males dated April 29 which are unquestionably immature, as shown by the general dullness of their colors and by the greenish wash on the nape, rump, and under surface; they probably represent the first nuptial plumage.

The range of this bird in Colombia is strictly confined to the Tropical Zone of the Caribbean coast, the published records for "Bogotá" entirely lacking confirmation. In the Santa Marta region it occurs in the lowlands and lower edge of the foothills up to about 1,000 feet, straggling rarely to 2,000 feet, and with one record (that by Simons) at 2,700 feet. While it is thus found over the whole of the littoral area from Dibulla to Fundación, as well as in the valley east of the mountains, it seems to be more abundant in the "dry forest" region back of Santa Marta. It keeps to the tangled undergrowth and thickets, and is rather noisy, having a peculiar whistling call-note of a bell-like quality.

Mr. Smith forwarded three nests with eggs (one and two to a set), taken at Bonda on May 16, 18, and 24. Dr. Allen describes them as follows: "The nests in a general way resemble the nest of *Manacus*, already described, from which they differ in being made of finer materials and in being more compactly built, with the bottom less open, and reinforced with an exterior covering of leaves. They are all attached by the rim to the twigs of a horizontally forked branchlet, and are composed of circularly woven plant stems (apparently, in large part, long slender petioles), with an outside covering of small dead leaves, sufficient in one nest to entirely cover the nest externally below, and nearly so in another. The rim of the nest is in each case bound to the supporting twigs mainly by a whitish mass of spider web held together apparently by the dried glutinous saliva of the bird, as in *Manacus*. The outside diameter across the rim is $2\frac{1}{2}$ to 3 inches,

the inside diameter about an inch less, and the depth of the cavity less than an inch.

"The three sets of eggs, while they have a mutual general resemblance, differ greatly in details of coloration, as do also the eggs of the same set. In one set the ground-color in one egg is dull pale creamy white, while in the other it is a much deeper shade of the same color; in the other eggs it is of about the same shade as in the paler egg of this set. The markings, generally of a very pale chocolate mixed with lilac shades, in the first set nearly cover the eggs, especially in the darker egg, while in the other set of two eggs they are sparser and coarser; in the single egg of the other set they are nearly all massed in a nearly solid broad ring about the greater end of the egg."

287. *Manacus manacus abditivus* Bangs.

Chiromacharis manacus (not *Pipra manacus* Linnæus). SALVIN and GODMAN, Ibis, 1880, 169 (Minca; habits).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 313 (Minca).

Manacus manacus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").

Manacus manacus abditivus BANGS, Proc. New England Zool. Club, I, 1899, 35 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 155, 184 (Bonda, Minca, Cacagualito, Don Amo, Masinga Vieja, and Jordan); XXI, 1905, 287 (Don Diego; descr. nest and eggs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 729 (diag.; range; references).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 625, 627, 628, in text (Minca, Cacagualito, Don Diego, and Bonda; meas.; crit.).

Manacus abditivus SHARPE, Hand-List Birds, III, 1901, 157 (ref. orig. descr.; range).

Manacus edwardsi var. *abditiva* DUBOIS, Syn. Avium, II, 1903, 1074 (ref. orig. descr.; range).

Chiromacharis manacus abditivus HELLMAYR, Wytzman's Gen. Avium, part 9, 1910, 23 ("Santa Marta," in range; ref. orig. descr.).—HARTERT, Bull. Brit. Orn. Club, XXIX, 1912, 64, in text (crit.).

Chiromacharis abditivus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 311 (ref. orig. descr.; range).

Additional records: Chirua, San Miguel, La Concepción (Brown); Fundación (Univ. Mich. Exp.).

Twenty-five specimens: Minca, Buritaca, Don Diego, Mamatoco, La Tigrera, Agua Dulce, Las Vegas, and Loma Larga.

The Santa Marta race of the White-breasted Manakin was discrim-

inated by Mr. Bangs in 1899, after a comparative study of material from various parts of the South American continent. More recently Dr. Chapman has given us an excellent review of the subject, pointing out anew the distinctive characters of the present form, which are confirmed by the above series. *M. manacus abditivus* is most closely related to *M. manacus interior* of Venezuela and eastern Colombia, but the under parts, particularly the flanks and crissum, are paler gray—a difference which is even more marked as regards the color of the rump and upper tail-coverts—while the throat-plumes are somewhat longer. It is known to range from the Santa Marta region westward along the Caribbean coast of Colombia, and thence into the interior to some extent, almost certainly meeting and intergrading with *M. manacus flaveolus*.

A resident of the foothills in the Tropical Zone, but apparently not common outside of the "dry forest" section. It was once noted on the east side of the Sierra Nevada, at Loma Larga, and it was very rare at Don Diego. It ranges from near sea-level up to 3,000 feet, but is most abundant below 2,000 feet. It keeps to the thickets and tangled undergrowth, and is quite shy and difficult to see. It has a most peculiar rattling call-note, given by the male alone, and sounding as if it were made by rapidly snapping the mandibles. Simons likens this note to the sound made by cracking nuts. The single nest sent in by Mr. Smith was collected at Don Diego on May 18, and contained two eggs. "This is a small, shallow, cup-shaped nest, attached by the rim to the forks of a small horizontal twig, the branches of which on two sides are built into the rim. The nest is so thin that the eggs are clearly visible through it from below, and is composed of long wiry grass stems or other plant fiber, neatly woven to form the circular nest. Its attachment to the twigs at the outer edge is effected not merely by weaving the plant fibers about the twig, but by the use of spider web, matted to the plant fibers by use of some glutinous matter, probably secreted by the bird. The transverse diameter of the rim is about 3 inches outside and 2 inches inside, with an inside depth of about 1 inch.

"The egg has the whitish ground-color nearly covered with longitudinal streaks of pale yellowish-brown, with, in places, a slight wash of lavender, the markings, except over the small end, occupying nearly the whole surface, with fainter interspaces between the heavier blotches. Size, 20×14.5 ."

Family TYRANNIDÆ. TYRANT FLYCATCHERS.

288. *Muscivora tyrannus* (Linnæus).

Milvulus tyrannus SALVIN and GODMAN, Ibis, 1879, 202 (Manaure and San Sebastian).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 277 (San Sebastian).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta"), 176 (Palomina).—BANGS, Proc. New England Zool. Club, I, 1899, 79 (San Sebastian).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 142 (Bonda, Valparaiso, and Cienaga).

Additional records: La Concepción (Brown).

Nine specimens: Buritaca, Mamatoco, Pueblo Viejo, Fundación, and Chirua.

Including two specimens in juvenal dress from Fundación, August 16, one of which shows a concealed crown-spot of buffy yellow, in imitation of that of the adult, while in both the back is tinged with pale green.

This widely distributed species is fairly common at times in the lowlands, but less so in the hills. Mr. Smith took it at Valparaiso, and there are two records also for San Sebastian, at 6,700 feet, but the writer has never met with it so high up. It was very common on the beach at Punto Caiman, as a rule perching on low trees and shrubs. When flying it usually goes against the wind, on account of its long tail-feathers.

289. *Tyrannus curvirostris curvirostris* (Hermann).

Tyrannus griseus SALVIN and GODMAN, Ibis, 1880, 125 (Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 271 (Santa Marta).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 142 (Bonda); XXI, 1905, 276 (Bonda).

Tyrannus dominicensis dominicensis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1907, 706 (Santa Marta and Bonda, in range; references).

Eighteen specimens: Bonda, Buritaca, Mamatoco, Punto Caiman, Fundación, Rio Hacha, Tucurinca, and Trojas de Cataca.

For the name here used compare Stresemann, *Novitates Zoologica*, XXVII, 1920, 329.

Adults taken in the latter part of September show renewal of the remiges in progress, while young birds shot in October are still in worn plumage. A male dated May 7 is marked as having the testes swollen.

One of the most abundant of the winter visitors, but confined to the lowlands and lower foothills. It is especially abundant on the

west side of the Sierra Nevada, and was seen in large flocks at Tucur-inca and Fundación from September 15 to about the middle of October.

290. ***Tyrannus melancholicus chloronotus*** von Berlepsch.

Tyrannus satrapa (not *Lophytes satrapa* Cabanis and Heine) SCLATER, Cat. Am. Birds, 1862, 235 ("Santa Marta").

Tyrannus melancholicus (not of Vieillot) SALVIN and GODMAN, Ibis, 1879, 202 (Atanquez).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 273 ("Santa Marta" and Atanquez).

Tyrannus melancholicus satrapa BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta"), 176 (Palomina and Macotama; plumage).—BANGS, Proc. New England Zool. Club, I, 1899, 79 (San Sebastian).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 142 (Bonda, Minca, Onaca, Cagualito, and Valparaiso); XXI, 1905, 281 (Bonda; descr. nest and eggs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 700 (Santa Marta region; meas.).

Tyrannus melancholicus chloronotus BANGS and PENARD, Bull. Mus. Comp. Zool., LXIV, 1921, 380 (Santa Marta; Santa Marta Mountains, Santa Cruz, Palomina, Macotama, San Sebastian, and La Concepción; crit.).

Additional records: Fundación, Gaira (Carriker).

Seventeen specimens: Bonda, Buritaca, Minca, Don Diego, Cincinnati, and La Tigra.

Compared with a series of equal size from Bolivia and Argentina, presumably representing true *melancholicus*, described from Paraguay, Santa Marta specimens are a little paler below, the throat and breast in particular. The difference is slight, however, and selected specimens are often indistinguishable. In these characters they agree better with a series from Central America, and we accordingly follow Messrs. Bangs and Penard in adopting for them the name *chloronotus* of von Berlepsch, based on a specimen from Yucatan.

No. 38,106 (Minca, August 19) is a male in juvenal dress, with the wing-coverts and rectrices margined with rusty buff, the back very dull grayish green, and a mere trace of a crown-spot.

A common bird everywhere in open country in the Tropical Zone or a little higher, from sea-level up to 5,000 feet, but more abundant in the lowlands and foothills. Its general habits are similar to those of its North American relatives, and like them it is an inveterate fighter of hawks.

Mr. Smith forwarded eleven nests with eggs, all taken at Bonda be-

tween April 12 and May 14. "Two of the nests have three eggs each, one has one egg, and the other eight nests have each two.

"The nests are of moderate size, with the outside diameter 120 to 160 mm.; the inside about 65 mm. Externally the nest is formed of rather coarse vegetable stems, neatly lined with finer material of the same character, the whole forming a neat, compact, substantial structure, deeply cupped, and saddled on a branch, usually at a fork, so that it is very securely supported.

"The eggs are quite variable in size, ground color, and markings. In an average set, the ground-color is very pale buffy white, blotched with dark chocolate, sparsely at the ends, but heavily about the middle, the large blotches often extending nearly to the larger end. The ground-color varies in different sets from nearly clear white to deep pinkish buff, and the blotches from chocolate to blackish. The eggs vary in measurements from 22×15 to 24×18.5 ."

291. *Tyrannus tyrannus* (Linnæus).

Tyrannus pipiri SALVIN and GODMAN, Ibis, 1880, 125 (Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 267 (Santa Marta).

Tyrannus tyrannus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 142 (Salvin and Godman's reference).—ALLEN, Auk, XVII, 1900, 364 (Santa Marta, ex Salvin and Godman).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 276 (Bonda and Buritaca; Salvin and Godman's record).

Eight specimens: Bonda, Buritaca, La Tigrera, Trojas de Cataca, and Tierra Nueva.

A rare winter visitor in the lowlands. All the specimens on record seem to have been taken in September, October, April, and May, suggesting that it may only be a transient during migrations. September 19 (1899) is the earliest date, and May 3 (1913) the latest. No. 43,275 (Tierra Nueva, October 12) is an adult, very much worn, but with no sign of moult, while No. 43,287 (taken a day later), a bird of the year, is still in comparatively fresh plumage.

292. *Pitangus lictor* (Lichtenstein).

Pitangus lictor ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 146 (Cacagualito).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 675 (Cacagualito, in range).

Twelve specimens: Fundación, Trojas de Cataca, Don Diego, and Arroya de Arenas.

These Colombian specimens are constantly a little larger than those

from Venezuela and French Guiana, but in the absence of any other characters we cannot see our way clear to recognizing a northern form of the species, as recently proposed by Messrs. Bangs and Penard (*Bulletin Museum of Comparative Zoölogy*, LXII, 1918, 78).

A species of wide distribution in the Tropical Zone of South America. Mr. Smith sent in a single specimen, said to have come from Cacagualito, but according to the writer's experience it is found only near sea-level, and invariably along the shores of some stream or marsh, often perching over the water. Those met with at Fundación were all out in the marsh, while at Trojas de Cataca they were out over the river. The usual note is weak and rather melancholy, resembling that of the species of *Myiozetetes*.

293. ***Pitangus sulphuratus rufipennis*** (Lafresnaye).

Pitangus derbianus (not *Saurophagus derbianus* Kaup) SALVIN and GODMAN, *Ibis*, 1879, 201 (Valle de Upar; crit.).

Pitangus derbianus rufipennis SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 175 (Santa Marta and Valle de Upar).—CHAPMAN, Bull. Am. Mus. Nat. Hist., VI, 1894, 41, in text ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 146 (Bonda and Santa Marta).

Megarhynchus pitangus (not *Lanius pitangus* Linnaeus) ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 283 (Bonda; descr. nest and eggs).

Pitangus sulphuratus rufipennis HELLMAYR, Nov. Zoöl., XIII, 1906, 24 (Santa Marta, in range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 179, in text (Santa Marta; crit.).

Additional records: Fundación (Univ. Mich. Exp.); Santa Marta (Carriker).

Nineteen specimens: Bonda, Mamatoco, Tucurinca, Gaira, Dibulla, and Rio Hacha.

These are not distinguishable in any way from specimens from near the type-locality (Caracas, Venezuela).

This large handsome flycatcher occurs throughout the whole of the littoral section, excepting only the more humid part of the northeast coast, and ranges through the valley east of the mountains also. It is an abundant bird in the irrigated lands around Santa Marta and Mamatoco, and very conspicuous too, with its bright colors and loud pugnacious call-note, which resembles closely the French words "qu'est-ce qu'il dit."

According to Mr. Cherrie (*Museum of the Brooklyn Institute Sci-*

ence *Bulletin*, I, 1908, 362, footnote) the description of the nest and eggs given by Dr. Allen under the head of "*Megarhynchus pitangus*" in reality applies to the present species instead. "The nests are massive, domed structures, with the entrance on one side near the top. They are globular in general outline, varying in size from about 10 to 15 inches (250-380 mm.) in diameter, and are placed in the upright forks of branches. They are constructed externally of coarse grass stems, long pieces of vine stems, and other coarse vegetable fibers, with a globular inner nest of finer materials, all compactly and firmly woven together. The materials vary considerably in the different nests, which also vary in size, those made of the finer materials being smaller than those constructed of coarser materials. Their large size must make them very conspicuous objects, but their thick walls must secure protection from enemies.

"The ground-color of the eggs is creamy white, varying somewhat in the depth of tone in different sets of eggs, sprinkled with dots and small blotches of rich chocolate and lavender, mostly about the greater end, but more or less scattered over the whole surface. The markings vary in size and abundance in different specimens, sometimes forming simply a circle of large blotches around the point of the greatest diameter of the egg, with the rest of the surface nearly free from markings; in other cases the whole surface is more or less marked with specks and spots, without forming a very distinct ring near the greater end." Of the fifteen sets of eggs, thirteen had two eggs each, one had three, and one had four. The dates were from April 7 to May 3.

294. *Megarynychus pitangua pitangua* (Linnæus).

Megarhynchus pitangua SALVIN and GODMAN, *Ibis*, 1879, 201 (Atanquez); 1880, 125 (Santa Marta).—SCLATER, *Cat. Birds Brit. Mus.*, XIV, 1888, 189, (Santa Marta and Atanquez).—BANGS, *Proc. Biol. Soc. Washington*, XII, 1898, 137 ("Santa Marta"), 176 (Palomina).—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 145 (Bonda and Minca).—CHERRIE, *Mus. Brooklyn Inst. Sci. Bull.*, I, 1908, 362 ("Santa Marta").

Additional records: Fundación (Carriker).

Eight specimens: Bonda, Minca, Mamatoco, and La Tigra.

We are unable to distinguish these satisfactorily from specimens from Bolivia, Venezuela, etc. It is very doubtful also if *M. pitangua mexicanus* (Lafresnaye) is really separable.

This large flycatcher occurs sparingly in the lowlands contiguous to Santa Marta and in the lower foothills, where it is confined to the woodland along streams and irrigated land. Only a few were noted at Tucurínca and Fundación, and none at all on the north coast or in the Sierra Nevada, although Mr. Brown got one from Palomina, and Simons secured a specimen at Atanquez, on the south slope of that range, while the writer found it at Valencia. Here, as elsewhere throughout its extensive range, it is a characteristic bird of the Tropical Zone.

295. *Myiodynastes chrysocephalus intermedius* Chapman.

Myiodynastes chrysocephalus (not *Scaphorhynchus chrysocephalus* Tschudi) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 158 (Pueblo Viejo), 176 (San Francisco).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 146 (El Libano, Valparaiso, and Las Nubes).

Myiodynastes chrysocephalus chrysocephalus TODD, Ann. Carnegie Mus., VIII, 1912, 209, in text (Santa Marta region; crit.).

Myiodynastes chrysocephalus intermedius CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 152 (Las Nubes; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 245 (ref. orig. descr.).—HELLMAYR, Arch. f. Naturg., LXXXV, A, 1920, 57 (ref. orig. descr.; crit.).

Additional records: La Concepción (Brown).

Fourteen specimens: Las Nubes, El Libano, Cincinatti, Chirua, and Heights of Chirua.

The present writer was the first to call attention to the peculiarities of Santa Marta specimens of *Myiodynastes chrysocephalus*, suggesting that they would eventually prove to be separable from the typical Peruvian birds, and this surmise was verified a few months later by Dr. Chapman upon comparison of suitable material. A little later still in the same year (1912) Messrs. Hellmayr and von Seilern independently came to the same conclusion as regards birds from northern Venezuela (*Archiv für Naturgeschichte*, LXXVIII, 1912, 82). Birds from the two regions, as shown by a good series in the Carnegie Museum, are absolutely indistinguishable from each other, and the latter authors' name *venezuelanus* will therefore fall as a pure synonym of *intermedius*, which has a few months' priority, although it may be well to remark that in case the unique type of *M. chrysocephalus cinerascens* should prove to be merely an abnormally colored specimen of the present form that name would naturally have precedence.

Nos. 37,776-8, Cincinnati, June 16, are in juvenal plumage, having the streaking on the under parts almost obsolete, the superciliary and malar stripes more buffy, the under mandible dark at the base, and the back brownish olive, with the pileum a little darker and browner, and without a trace of a median crown-spot. February and March adults are more richly colored than those taken in June, with the margins of the remiges and rectrices rufous rather than buffy.

On the San Lorenzo this bird is found between 4,000 and 6,000 feet, but in the Sierra Nevada its range drops down to nearly 2,000 feet. In its faunal distribution it may be considered essentially Subtropical, but it is not an abundant bird anywhere. Ordinarily it is a forest-dweller, keeping to the tops of the trees, but occasionally it ventures into the higher parts of the coffee haciendas or plantations.

296. *Myiodynastes maculatus maculatus* (Müller).

- Myiodynastes nobilis* SCLATER, Proc. Zool. Soc. London, 1859, 42 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.; crit.).—SCLATER, Cat. Am. Birds, 1862, 223 ("Santa Marta").—SCLATER and SALVIN, Proc. Zool. Soc. London, 1864, 360 ("Santa Marta").—GIEBEL, Thes. Orn., II, 1875, 669 (ref. orig. descr.).—VON BERLEPSCH, Journ. f. Orn., XXXII, 1884, 303, in text ("Santa Marta"; crit.).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 183 (Santa Marta, Minca, Valle de Upar, and Manaure).—BRA-BOURNE and CHUBB, Birds S. Am., I, 1912, 294 (ref. orig. descr.; range).
Myiodynastes audax SALVIN and GODMAN, Ibis, 1879, 201 (Manaure).
Myiodynastes audax nobilis BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta"), 176 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 145 (Bonda, Minca, and Cacagualito); XXI, 1905, 283 (Bonda; descr. nest and eggs).
Myiodynastes maculatus nobilis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 659 (Santa Marta localities and references).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 463 ("Santa Marta").

Additional records: Fundación (Carriker).

Twenty-five specimens: Bonda, Buritaca, Cacagualito, Don Diego, Cincinnati, Minca, Mamatoco, and La Tigrera.

After examining and comparing a good series of specimens from Costa Rica, Colombia, Venezuela, Trinidad, and French Guiana, it is our deliberate judgment that they belong to one and the same form. Individual and seasonal variation in birds from the same region far outweighs the geographical variation alleged to exist. There is certainly no constant difference in the character and extent of the streak-

ing on the under parts between birds from Costa Rica and Venezuela, while the exact color of the upper parts is also a variable quantity, birds in fresh plumage generally having more buffy suffusion. Under such circumstances it will naturally be impossible to maintain the name *nobilis*, originally based by Sclater on an example from the Santa Marta region, and applied by later authors to the birds of the entire region from Ecuador to Costa Rica.

A characteristic species of the Tropical Zone, occurring in considerable numbers from sea-level up to 4,500 feet, and apparently as common at one elevation as another within these limits. It frequents open woodland, groves of scattered trees, and cleared land where some trees have been left standing, keeping high up in the tall trees as a rule. It is an active, noisy species, with a loud harsh call-note.

297. ***Myiarchus tuberculifer tuberculifer*** (Lafresnaye and D'Orbigny).

Myiarchus nigriceps (not of Sclater, 1860) SALVIN and GODMAN, Ibis, 1880, 125 (Minca).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 258 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta"), 158 (Pueblo Viejo), 176 (Palomina and San Miguel; plum.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 143 (Minca, Onaca, Las Nubes, Cacagualito, and Valparaiso).—NELSON, Proc. Biol. Soc. Washington, XVII, 1904, 49 (San Miguel "Island" [error], in range).—THAYER and BANGS, Bull. Mus. Comp. Zool., XLVI, 1905, 153, in text (San Miguel; correction of Nelson's reference).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 650 (Santa Marta localities and references; meas.).

Myiarchus tuberculifer? HELLMAYR, Nov. Zool., XIII, 1906, 26 ("Santa Marta"; crit.).

Myiarchus tuberculifer tuberculifer CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 477 ("Santa Marta"; crit.).

Additional records: San Francisco, La Concepción (Brown); Tucurínca (Carriker).

Forty-four specimens: Bonda, Cacagualito, Jordan, Minca, Fundación, Don Diego, La Tigrera, Cincinnati, Las Vegas, and Pueblo Viejo.

This series agree well with examples from eastern Bolivia, whence came Lafresnaye and D'Orbigny's type, the pileum averaging merely a trifle duller, and the size a little less. Specimens from the Santa Marta region were at first referred to the *M. nigriceps* of Sclater, described from Ecuador, but this is recognizably distinct from the present form, for which *tuberculifer* is the earliest name, as definitely

shown by Mr. Hellmayr (*Novitates Zoologicae*, XIII, 1906, 323).

In juvenal and first winter plumage the remiges and rectrices are prominently edged with ochraceous tawny, which makes the species look very much like some of its allies. Spring birds may even show traces of this rusty color. In juvenal dress, illustrated by individuals taken on June 6 and July 25, the yellow below is very pale, the under tail-coverts buffy-tinged, and the back dull dusky olive, with the pileum darker, but not so strongly contrasted as in the adult.

This is the common *Myiarchus* of the region stretching from sea-level up to 5,000 feet, which includes all of the Tropical Zone. Its altitudinal range is thus considerably more extensive than that of the other two local species of this group. It is particularly abundant in the coffee haciendas.

298. *Myiarchus ferox panamensis* Lawrence.

Myiarchus tyrannulus (not *Muscicapa tyrannulus* Müller) SALVIN and GODMAN, *Ibis*, 1880, 125 (Santa Marta).

Myiarchus ferox (not *Muscicapa ferox* Gmelin) SCLATER, *Cat. Birds Brit. Mus.*, XIV, 1888, 253 (Santa Marta).—BANGS, *Proc. Biol. Soc. Washington*, XII, 1898, 137 ("Santa Marta").—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 142 (Bonda).

Myiarchus ferox panamensis NELSON, *Proc. Biol. Soc. Washington*, XVII, 1904, 29 (Santa Marta, in range).—RIDGWAY, *Bull. U. S. Nat. Mus.*, No. 50, IV, 1907, 640 (Santa Marta and Bonda, in range; mēas.; references).

Seventeen specimens: Bonda, Cautilito, Don Diego, La Tigra, Tucurín, Fundación, and Punto Caiman.

Compared with a series of typical *M. ferox ferox* from Cayenne the present form is strikingly distinct. In *ferox* the upper parts are dark olive, shading into nearly dusky on the pileum, while in *panamensis* these parts are much paler, between citrine drab and deep olive. The wings, tail, and bill are also very much darker, nearly black indeed, in the typical form; the gray of the throat and breast is deeper, and the yellow beneath is duller than in *panamensis*. In fact the latter is sufficiently different, as distinctions go in this genus, to stand as a full species, as given by von Berlepsch (*Ornis*, XIV, 1907, 477), were it not for the fact that in all respects the Orinoco form, *M. ferox venezuelensis*, is exactly intermediate.

An example dated October 7 shows the moult of the remiges and rectrices in progress. Another, taken August 13, if referable to this

species, is immature, the remiges and rectrices being prominently edged with cinnamon.

Simons secured a specimen of this species (erroneously referred at the time to *M. tyrannulus*) in the immediate vicinity of Santa Marta. It occurs throughout the lowlands around this locality, and perhaps even more commonly on the west side of the Sierra Nevada, but not going above 1,000 feet. We have seen it at Valencia, in the Rio Cesar Valley. Like many others of the genus, it prefers open country, scattered trees and shrubbery.

299. ***Myiarchus tyrannulus tyrannulus*** (Müller).

Myiarchus erythrocerus WYATT, Ibis, 1871, 333 (Santa Marta).—SALVIN and GODMAN, Ibis, 1880, 125 (Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 143 (Bonda, Santa Marta, and Cacagualito); XXI, 1905, 282 (Bonda; descr. nest and eggs).

Myiarchus tyrannulus SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 251 (Santa Marta).

Additional records: San Francisco (Brown).

Twenty-three specimens: Bonda, Cautilito, Mamatoco, Rio Hacha, Fundación, and La Tigrera.

A single topotypical Cayenne specimen is matched very closely by certain of the above series, but most of the specimens are a little grayer above. From the material studied in this connection it appears very doubtful if this species can be divided into recognizable geographic races, aside, of course, from the Brazilian form (*bahiæ*). At any rate the forms described from Curaçao and Matto Grosso are certainly not separable.

Two specimens from Mamatoco, September 1 and 2, are in postnuptial moult, renewing the remiges and rectrices. In another specimen from the same locality, dated April 26, the cinnamon area on the outer rectrix is much reduced in width, and not sharply defined from the dusky part.

This species occurs only in the lowlands and lower foothills, scarcely passing the 1,000-foot limit. It is less abundant than *M. ferox panamensis*, although found under about the same conditions.

The nest is built in hollow trees, just as in the case of *M. crinitus*. Of two nests sent in by Mr. Smith, one was "*in situ* in the hollow hollow stump of a dead stub, about one foot below the top of the

stump. So far as can be determined without removal from the stump, it consists of a felted mass of soft materials lining the bottom of the cavity. The other nest, removed from the nesting cavity by the collector, consists chiefly of hair, with a few green parrot feathers and bits of snake skin, the latter a usual component of the nests of various species of *Myiarchus*.

"The number of eggs to the set varies from two to four, one set containing four, two sets two each, and three sets three each. They are of the usual *Myiarchus* style, the ground-color being creamy white, profusely marked with narrow longitudinal streaks of purplish chocolate, most heavily at the larger end. There is a wide range of variation in the amount and color of the markings, in some of the eggs the streaks covering much more than half of the surface, while in others much the greater part of the egg is white."

300. *Myiarchus crinitus* (Linnæus).

Myiarchus crinitus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 142 (Bonda).—ALLEN, Auk, XVII, 1900, 364 (Bonda; "Santa Marta," *ex* Bangs).—NELSON, Proc. Biol. Soc. Washington, XVII, 1904, 29 ("Santa Marta Mountains," winter, in range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 613 (Bonda and Santa Marta, in range; references).

Two specimens: Bonda and Mamatoco.

The Crested Flycatcher is a winter resident, coming from the eastern United States, but apparently not common so near the southern limit of its range. Mr. Brown sent in but one specimen, presumably from the vicinity of Bonda, and Mr. Smith only five from the same locality, taken at dates varying from November 1 to February 27. It was met with on but one occasion (April 26, 1912) by the writer, when a single bird was taken at Mamatoco, apparently alone, in open woodland. The late date of capture is remarkable, since the species is known to reach the United States in its northward migration long before this.

301. *Sayornis latirostris fumigatus* Todd.

Sayornis cineracea (not *Tyrannula cineracea* Lafresnaye) SCLATER, Cat. Am. Birds, 1862, 200 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1879, 201 (San José).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 34 ("Santa Marta," San José, and Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta"), 174 (San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 78 (San Sebastian).—ALLEN, Bull. Am. Mus. Nat.

Hist., XIII, 1900, 151 (Cacagualito and Onaca); XXI, 1905, 287 (Bonda; descr. nest and eggs).

Sayornis latirostris fumigatus TODD, Proc. Biol. Soc. Washington, XXXIII, 1920, 72 (Don Diego; orig. descr.; type in coll. Carnegie Mus.).

Additional records: La Concepción, Chirua (Brown).

Thirteen specimens: Bonda, Minca, Mamatoco, Cincinnati, Las Vegas, Don Diego, Pueblo Viejo, and La Tigrera.

Messrs. Bangs and Penard (*Bulletin Museum of Comparative Zoölogy*, LXIII, 1919, 28) have recently shown that the specific name *cineracea*, heretofore in use for this form, has been misapplied, and really belongs to a species of *Myiochanes*. They adopt instead the name *latirostris* of Cabanis and Heine, based on the bird of Bolivia. Specimens from that country in the collection of the Carnegie Museum are obviously separable from the Colombian and Venezuelan birds by their duller, browner general coloration, so that it has become necessary to provide the northern birds with a new name. The differences existing between *S. latirostris* and *S. nigricans* are such, in the judgment of the writer, as to justify specific rank for both. The present series includes several immature birds, in which the wing-coverts are tipped with buffy instead of white.

The range of this species lies within the Tropical Zone, extending upward from sea-level to nearly 5,000 feet. It is of local distribution, occurring wherever there are rapid streams. It seldom perches on trees, keeping more to the rocks in the streams, like *Serpophaga cinerea cana* and *Cinclus rivularis*. The nest is usually built under an overhanging rock at the edge of a stream, and is of the same type of construction as that of *S. phæbe* of the eastern United States. The eggs, according to Dr. Allen, are clear dull white, unspotted, and (in the single set received) three in number.

A most unusual nesting-site was observed by the writer in May, 1919. In this case the nest was built under the roof of the veranda in front of the main house at the hacienda Cincinnati, the nearest stream being fully two hundred yards away. Later in the season the birds built another nest on the back porch of the same building. The species is thus beginning to imitate the Phæbe-bird of the north in its selection of a nesting-site.

302. ***Empidonax traillii brewsteri*** Oberholser.

Empidonax ridgwayi (not of Sclater) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 144 (Bonda).

Empidonax traillii (not *Muscicapa traillii* Audubon) ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 276 (Buritaca, Bonda, and Cautilito; crit.).

Empidonax traillii traillii RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 555 (Santa Marta localities and references).

Seven specimens: Bonda, Buritaca, Mamatoco, Tucurinca, and Fundación.

A winter visitor from the north, confined to the lowlands during its stay, and rare in most localities. Six specimens received from Mr. Smith, including one taken as early in the season as August 27, were inadvertently referred to *E. ridgwayi* by Dr. Allen, the mistake being corrected later, upon the receipt of additional specimens, all being identified as *E. traillii* "*traillii*." Nearly all of these are in worn breeding dress, some beginning to moult already, as are also the three examples sent in by the junior author. There appears to be no regularity in the time of moulting, but this may of course depend upon the age of the bird. Thus, No. 49,506, Tucurinca, September 23, is badly worn and faded, but shows no sign of moult; No. 49,576, Fundación, October 11, is undergoing moult of the remiges, wing-coverts, and body-plumage; and No. 9,018, Bonda, October 1, has apparently entirely completed the moult. The difficulty, if not impossibility, of positively determining the subspecies from winter specimens is such that the name here used must be accepted only as provisional. It must be admitted that it is unusual to find western forms from the North American continent going farther south in winter than eastern ones.

For the name here used compare Oberholser, *Ohio Journal of Science*, XVIII, 1918, 85-98.

303. ***Empidonax virescens*** (Vieillot).

Empidonax virescens BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 143 (Bonda, Onaca, and Valparaiso).—ALLEN, Auk, XVII, 1900, 365 (Bonda, Onaca, and Valparaiso; Santa Marta, *ex* Bangs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 552 (Santa Marta localities and references).

One specimen: Onaca.

Another winter resident species, but apparently rare, since it was not detected at all by Mr. Carriker. In addition to the four skins re-

corded by Dr. Allen, as above, Mr. Smith sent in another later, taken at Las Nubes, December 21, 1898, and one to the Carnegie Museum from Onaca, December 26 of the same year. At the time these birds were taken they were the only Colombian records, but the species is now known to range in winter through that country, west of the Central Andes, into western Ecuador.

304. *Myiophobus fasciatus fasciatus* (Müller).

Myiobius navius BANGS, Proc. Biol. Soc. Washington, XII, 1898, 158 (Pueblo Viejo), 176 (Palomina; plumage).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 145 (Minca).

Additional records: San Francisco, La Concepción (Brown).

Three specimens: Cincinnati, Pueblo Viejo, and Chirua.

These are quite indistinguishable from topotypical Cayenne specimens. Two have the crown-spot almost wholly orange rufous, while in the third it is pure lemon yellow.

A rare bird in this region. Mr. Brown got a few specimens at certain points in the Sierra Nevada, while Mr. Smith sent in but one, collected at Minca. By the writer it has been met with on but three occasions, one having been taken at Cincinnati, in some newly cleared land at about 3,500 feet, another near Pueblo Viejo in some shrubbery beside the trail at about 2,500 feet, and a third at Chirua under the same conditions at about 3,000 feet. It is thus confined to the Piedmont belt of the Tropical Zone.

305. *Empidochanes fuscatus cabanisi* (Leotaud).

Empidochanes cabanisi ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 144 ([Playa] Concha, Bonda, and Valparaiso).

Empidochanes fuscatus cabanisi VON BERLEPSCH and HELLMAYR, Journ. f. Orn., LIII, 1905, 21 ("Santa Marta," in range).

Eleven specimens: Bonda, Mamatoco, Dibulla, Fundación, and Valencia.

With no specimens of true *E. fuscatus* available for comparison at the present writing, it is not possible to decide independently as to the proper status of the present form, so that we follow Messrs. von Berlepsch and Hellmayr in keeping it as a subspecies. There is considerable seasonal variation evident in the series, October specimens being richer brown above and brighter yellow below than those shot in April.

A rare bird, whose exact range is uncertain, although it seems confined to the Tropical Zone. Mr. Smith forwarded a specimen from Valparaiso (4,500 feet), but the writer has never taken it above the lowlands. The Mamatoco specimens were all shot in the woodland along the Manzanares River, while the individual taken at Dibulla was shot in the shade-trees of a cacao-plantation.

306. *Myiochanes brachytarsus* subsp.

Contopus brachytarsus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 143 (Minca and Cacagualito).—(?) ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 282 (Bonda; descr. nest and eggs).

Myiochanes brachytarsus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 526 (Santa Marta localities and references).

Eleven specimens: Don Diego, Minca, Dibulla, and Mamatoco.

The subspecific name which these specimens should bear is uncertain. They certainly differ from three Costa Rican skins (birds in fresh plumage alone being considered) in being more grayish, less brownish above, but the latter may not represent true *brachytarsus* (described from Mexico). On the other hand, they agree in color with several specimens from Bolivia and Argentina which Dr. Oberholser pronounces *M. brachytarsus andinus*, but their bills average 2 mm. longer. Both Mr. Hellmayr and Dr. Hartert have accepted the name *andinus* for the South American form of *M. brachytarsus*, despite certain discrepancies between Taczanowski's description and specimens from that continent, and a re-examination of the type in the Warsaw Museum is desirable, but for obvious reasons is not practicable at present. Mr. Hellmayr further insists that the *Platyrrhynchus cinereus* of Spix is conspecific with the present species (*Abhandlungen der Königlich Bayerischen Akademie der Wissenschaften*, Math.-phys. Kl., XXVI, 1912, 120), an opinion with which, after consulting the original description and plate, we can scarcely agree.

Individual and seasonal variation is considerable in this species, and complicates the question still further. In most specimens the pileum is distinctly dusky as compared with the back, but in one skin from Don Diego (No. 44,626, February 5) it is scarcely different.

A species which does not seem to be common anywhere, although perhaps more numerous in the lowlands. In its haunts and habits it is very similar to *M. virens*, while the nests and eggs described by Dr.

Allen, and supposed to belong to this species, are also about the same. The nesting dates lie between April 8 and May 20.

307. **Myiochanes virens** (Linnaeus).

Contopus virens SALVIN and GODMAN, Ibis, 1880, 125 (Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 238 (Santa Marta).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1889, 84 (Santa Marta, in range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 143 (Valparaiso and Cacagualito).—ALLEN, Auk, XVII, 1900, 365 (Valparaiso and Cacagualito; Santa Marta, *ex* Salvin and Godman).

Myiochanes virens RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 518 (Valparaiso, in range; references).

Eight specimens: Bonda, Cincinnati, Mamatoco, and La Tigrera.

A regular and fairly common winter visitor, both in the highlands and in the lowlands, with habits the same here as in its summer home in the north, except that the call-note "pe-wee" is rarely given. The specimens above listed were all shot at dates ranging from April 11 to 29, and are in fine fresh plumage, more suffused with yellow below than Florida examples taken at about the same time. Mr. Smith sent in one specimen shot at the remarkably late date of May 10.

308. **Nuttallornis borealis** (Swainson).

Contopus borealis SALVIN and GODMAN, Ibis, 1880, 125 (Minca).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 234 (Minca).

Nuttallornis borealis BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 98 (La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 143 (San Lorenzo).—ALLEN, Auk, XVII, 1900, 365 (San Lorenzo; Minca, *ex* Salvin and Godman; La Concepción, *ex* Bangs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 505 (Santa Marta localities and references).

Three specimens: Cincinnati and Pueblo Viejo.

The Olive-sided Flycatcher is a regular but not common winter visitor in the highlands, not descending below 2,000 feet, nor going above 7,000 feet, so far as known. Simons got one at Minca on March 13, 1879; Mr. Brown took one at La Concepción March 8, 1899; and Mr. Smith also sent in one from San Lorenzo, taken at the remarkably late date of May 13—a time when the bulk of the species is well on its northward way. Dates for the above specimens are April 11, 1912, March 22, 1913, and March 5, 1914. The March birds show moult of the body-plumage in progress, while in all three the wings and tail are fresh and unworn.

Invariably it selects a perch high up on a dead tree, as in the north, from which lofty position it darts out at intervals after passing insects. In addition to the examples secured several were seen at Las Vegas also.

309. *Pyrrhomys vieillotioides assimilis* (Allen).

Myiobius vieillotioides (not *Tyrannula vieillotioides* Lafresnaye) SALVIN and GODMAN, Ibis, 1880, 125 (San Sebastian).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 202 (San Sebastian).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 176 (San Francisco).

Myiobius assimilis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 144 (Valparaiso [type-locality], El Libano, and Las Nubes; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—DUBOIS, Syn. Avium, II, 1903, 1077 ("Santa Marta," in range; ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 296 (ref. orig. descr.; range).

Myiobius vieillotioides assimilis HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 83, in text (Sierra Nevada de Santa Marta; crit.; ref. orig. descr.).

Additional records: La Concepción, Santa Cruz, San Miguel, Chirua, Palomina (Brown).

Thirty specimens: Las Nubes, Cincinnati, Las Vegas, Cerro de Caracas, Minca, and San Miguel.

After a careful comparison of this fine series with our specimens of true *vieillotioides* from Venezuela it is evident that *assimilis* should stand as a subspecies of that form, as claimed by Messrs. Hellmayr and von Seilern. All its characters are merely an exaggeration of those of *vieillotioides*. It is more strongly rufescent throughout, particularly on the wings and tail, where the dusky areas are reduced in extent.

Oddly enough, specimens collected at such various times as June, August, and November are renewing the remiges and rectrices.

This form is one of those which are peculiar to the Santa Marta region, the first known specimen having been secured by Simons at San Sebastian in 1879. Mr. Brown took a good series in the Sierra Nevada, but it was not until Mr. Smith sent in his specimens that it was discovered to be distinct from the Venezuelan bird, and duly christened *assimilis* by Dr. Allen. In the San Lorenzo district it is essentially a bird of the Subtropical Zone, being found between 4,000 and 6,000 feet wherever heavy forest is present. There is a record for Minca, however, which would bring it down to about 2,200 feet. In the Sierra Nevada, on the other hand, it ranges upward into the Temperate Zone,

having been taken up to 10,000 feet on the Cerro de Caracas. This would seem to be unusual, and probably 7,000 feet is the ordinary maximum altitude for the species. It is a very tame bird, and easily approached, always occurring in pairs. It is partial to the open spots in the forest or along roadsides, where a perch is selected commanding a bit of open, from which the bird darts out at passing insects in the typical manner of flycatchers.

310. *Terenotriccus erythrurus fulvicularis* (Salvin and Godman).

Myiobius erythrurus (not of Cabanis) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 144 (Jordan).

Five specimens: Don Diego and Mamatoco.

One specimen was taken in the woodland along Tamocal Creek, between Mamatoco and La Tigrera, while two were secured in the heavy forest at Don Diego. There are also two specimens sent in by Mr. Smith from this latter locality in the collection of the Carnegie Museum. According to the writer's previous experience with this bird, it is partial to very humid, dense forest, and such conditions not existing here (at least at low altitudes) it is consequently very scarce.

311. *Pyrocephalus rubinus saturatus* von Berlepsch and Hartert.

Pyrocephalus rubineus (not *Muscicapa rubinus* Boddaert) SALVIN and GODMAN, Ibis, 1879, 202 (Valle de Upar; crit.); 1880, 125 (Valencia).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 211 (Valle de Upar and Valencia).

Pyrocephalus rubinus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 144 (Salvin and Godman's references).

Pyrocephalus rubinus heterurus (not of von Berlepsch and Stolzmann) RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 473, part (Santa Marta references).

Fourteen specimens: Dibulla and Rio Hacha.

Mr. Ridgway (without of course seeing specimens) has referred the only previous records for *Pyrocephalus* for this region to *P. rubinus heterurus*, but this proves to be a mistake. The present series agree exactly with birds from the Orinoco, and show no approach to *heterurus*. This considerably extends the known range of *saturatus*.

The Vermilion Flycatcher is primarily an inhabitant of the open plains or savanna regions, such as abound on the south and east sides of the Sierra Nevada. Both Simons and the writer have found it at Valencia, on the south side, from which it doubtless extends continu-

ously around to the Goajira Peninsula, and has even worked west along the coastal plain in small numbers as far as Dibulla. It was abundant around Rio Hacha in the more open parts of the scrub growth.

312. *Capsiempis flaveola leucophrys* von Berlepsch.

Four specimens: Fundación.

There is an authentic skin of this form, received from von Berlepsch himself, in the collection of the U. S. National Museum, with which the above have been compared, and found to agree very closely, although none of them are quite so white on the chin. The form is sufficiently well characterized, but is clearly conspecific with *C. flaveola flaveola*, while the Central American bird should stand as *C. flaveola semiflava* (Lawrence).

Four specimens were taken at Fundación in October, 1915, all in open woodland, rather low down among the shrubbery or in open places in the forest. It is a restless bird, feeding more like a vireo than a flycatcher.

313. *Leptopogon amaurocephalus diversus* Todd.

Leptopogon amaurocephalus (not of Cabanis) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 149 (Bonda; crit.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 450 ("Santa Marta"; crit.).

Leptopogon amaurocephalus diversus TODD, Proc. Biol. Soc. Washington, XXVI, 1913, 171 (Mamatoco; orig. descr.; type in coll. Carnegie Mus.).

Five specimens: La Tigrera, Mamatoco, Fundación, and Tucurínca.

With a series of eleven skins now available, it is evident that not all of the characters given in the original diagnosis of this form hold good. The type happens to have an unusually dark cap, nearly all the others having the pileum paler; in fact, this is a character which varies unduly in all the forms of this species, and no dependence can be placed on it. The series averages *lighter* green above if anything than true *amaurocephalus*, but the difference here is very slight. The Santa Marta bird is a pale littoral race, distinguishable from both *amaurocephalus* and *faustus* by the lighter and more uniform coloration of the under surface. Specimens from the interior of Colombia are decidedly more richly colored, and are clearly referable to a different race, which is probably *peruvianus* of Sclater and Salvin. The

above remarks are based on a comparison of our series with several skins from Brazil and Bolivia, presumably representing true *amaurocephalus*, and with the type-series of *faustus*, kindly loaned by Mr. Bangs. The latter race we consider doubtfully distinct from *pileatus*.

This flycatcher was detected in the lower foothills of the semi-arid section, where it was taken in the fringe of trees along the small streams between Mamatoco and La Tigrera. Specimens were secured also at Fundación and Tucurinca, while Mr. Smith's collectors took two at Bonda, probably along the Manzanares River.

314. *Mionectes olivaceus galbinus* Bangs.

Mionectes olivaceus (not of Lawrence) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 158 (Pueblo Viejo).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 149 (Minca, Onaca, Valparaiso, and El Libano).

Mionectes olivaceus galbinus BANGS, Proc. New England Zool. Club, III, 1902, 85 (La Concepción; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—VON BERLEPSCH, Ornith., XIV, 1907, 493 (crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 461 (diag.; range; references).—HELLMAYR, Proc. Zool. Soc. London, 1911, 1131, in text (ref. orig. descr.; crit.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 78, in text (crit.; ref. orig. descr.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 178, in text ("Santa Marta"; crit.).—HELLMAYR, Arch. f. Naturg., LXXXV, A, 1920, 52 (ref. orig. descr.; crit.).

Mionectes oleagineus var. *galbina* DUBOIS, Syn. Avium, II, 1903, 1075 (ref. orig. descr.).

Mionectes galbinus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 284 (ref. orig. descr.; range).

Additional records: San Miguel, Palomina (Brown).

Twenty-nine specimens: Valparaiso, Cincinnati, Las Taguas, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, San Lorenzo, and Don Diego.

Mionectes olivaceus galbinus is the brightest in color of all the races of the species, the black being yellowish oil green, with the pileum little darker, and the abdomen pale lemon yellow. In juvenal dress, illustrated by two specimens dated July 8 and 21, the color-pattern is the same, but all the colors are duller, and the streaking below obsolescent. If the present series are correctly sexed, as there is every reason to believe, it is evident that the attenuation of the ninth primary is not a sexual character, as has been supposed, since there are numerous ex-

amples of both sexes in which this feather is of normal shape and size, while there are several females with the attenuation well developed.

The normal range of this bird, at least on the San Lorenzo, seems to be between 4,000 and 6,000 feet, so that it was a cause for surprise to find a few at Don Diego, at sea-level. It was noted also at several points in the Sierra Nevada, although no specimens were taken. It is strictly confined to the heavy forest in its local habitat, keeping low down among the undergrowth and small trees.

315. *Pipromorpha oleaginea parca* (Bangs).

Mionectes oleagineus (not *Muscicapa oleaginea* Lichtenstein) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 149 (Bonda, Minca, and Cacagualito).

Pipromorpha oleaginea parca RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 457 (Santa Marta localities and references; meas.; crit.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 449 ("Santa Marta"; crit.).—TODD, Proc. Biol. Soc. Washington, XXXIV, 1921, 186 (Santa Marta references and localities).

Twenty-seven specimens: Bonda, Buritaca, Mamatoco, La Tigrera, Las Vegas, Minca, and Don Diego.

Pipromorpha oleaginea parca may readily be distinguished from the typical form by the decidedly ochraceous buffy wash on the wings and upper tail-coverts. The upper parts in general are paler green; the tail is lighter brown, and the under parts paler ochraceous. Described originally from Panama, its range is now known to include the lower valleys of the Magdalena and Cauca Rivers in Colombia, as well as the Santa Marta region.

This species inhabits the humid lowlands and the foothills of the more arid portion back of Santa Marta. It is strictly a Tropical Zone form, and between 2,500 and 3,000 feet is merely a straggler. It was abundant in the heavy forest at Don Diego, on the north coast. It shuns the open woodland, preferring shady ravines near small rivulets, and keeping low down.

316. *Myiozetetes similis columbianus* Cabanis and Heine.

Myiozetetes texensis columbianus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta"), 176 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 146 (Bonda, Minca, Santa Marta, and Cacagualito).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 449 (Santa Marta localities and references).

Myiozetetes similis columbianus ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 284 (Bonda; descr. nest and eggs).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 460 (Bonda; crit.).

Additional records: Chirua (Brown).

Fourteen specimens: Minca, Buritaca, Mamatoco, Don Diego, Turcurinca, and Fundación.

We agree with Dr. Chapman that this form is too close to *M. similis* to stand otherwise than as a subspecies of that form.

According to the writer's experience this flycatcher ranges over the whole of the region from sea-level up to about 2,500 feet, although Mr. Brown recorded it at Palomina, which lies at an elevation of 5,000 feet, and at Chirua. It was more abundant around the marshes at Fundación than at any other point visited. It prefers the edges of marshes or streams, often perching at no great height over the water. It is always seen in pairs or family groups, and is noisy and active, feeding on the wing a great deal, like others of the group. Mr. Smith sent in no less than thirteen nests, all from Bonda, and all but one taken between April 7 and 27. Dr. Allen describes the nest as "a domed structure, large for the size of the bird, placed in the fork of a branch. It is composed of dead grass, usually of a reddish brown color, with numerous conspicuous tufts of white cotton woven into the base and sides. In some cases cotton forms the greater part of the exterior, while in other nests very little is used, but usually it is a conspicuous feature of the structure. In one case, the soft downy substance is not cotton, but is of a silky texture, very soft, and more or less yellow, or even reddish, in color, it being the soft down of some other plant than cotton. The inside or lining of the nest is fine vegetable fibers, without any plant down, which is all applied to the outside of the nest instead of being utilized as a soft lining. The opening is large, circular, and occupies the greater part of one side of the nest. The general form of the nest is nearly spherical or globular. The vertical diameter of the nest is about 6 to 8 inches, with a transverse diameter of about 4 to 6 inches, the size varying considerably in different nests.

"The eggs are ovate to elliptical ovate, with the ground-color nearly clear white, sparingly marked with small spots of brown and lavender, the spots being larger and more crowded about the larger end. They vary considerably in size and form, even in eggs of the same set."

317. *Myiozetetes cayanensis hellmayri* Hartert and Goodson.

Eleven specimens: Trojas de Cataca, Tucurínca, and Fundación.

The identification of these specimens has involved a comparative study of the geographical variants of this species, the results of which are briefly presented herewith. The typical form comes from Cayenne: it is a deeply colored bird, dark olive above, and with very little (sometimes no) hazel on the outer webs of the remiges, while their inner webs are margined with cinnamon or buffy. The rectrices likewise have little or no cinnamoneous edgings. In the Orinoco region we find a form which is brighter, purer olive above, and with considerably more rufescence on the wings and tail, both externally and internally. For this form the name *M. guianensis* of Cabanis and Heine (*Museum Heineanum*, II, 1859, 61) is probably available. It is recognizably distinct from the northern Venezuelan form (*M. cayanensis rufipennis* Lawrence), in which its characters are carried to an extreme. In *rufipennis* the hazel area on both webs of most of the remiges reaches the shafts of the feathers; the wing-coverts, lower back, rump, and upper tail-coverts are also more rufescent; and the tail extensively so.

In Colombian examples (including, besides those above listed, eight specimens from other regions), however, we find a return to the characters of typical *cayanensis*. There is a great reduction in the amount of rufescence on the wings and tail as compared with *guianensis*, although it averages rather more than in *cayanensis*. The form may readily be distinguished from *cayanensis* by the much paler, greener color of the upper parts, particularly evident in fresh specimens. It is clearly entitled to the recognition recently accorded by Messrs. Hartert and Goodson (*Novitates Zoologicae*, XXIV, 1917, 412), whose name is here adopted.

A Tropical Zone form, but not noted except in the southwest part of this region. Three birds were taken along the shore of the Ciénaga Grande at Trojas de Cataca, two of them on some poles stuck up in the water near a fisherman's hut, the third in a tree overhanging the water. Later on a few additional examples were shot at Fundación and Tucurínca.

318. *Legatus leucophaeus* (Vieillot).

Legatus albicollis SALVIN and GODMAN, Ibis, 1880, 124 (Minca).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 155 (Minca).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 147 (Bonda, Minca, and Jordan).

Nine specimens: Bonda, Minca, Mamatoco, La Tigrera, and Santa Marta.

For the specific name here used consult Hellmayr, *Verhandlungen der Ornithologischen Gesellschaft in Bayern*, XIV, 1920, 283.

Much of the variation in this species appears to be of a seasonal character, specimens in fresh plumage having the under parts more heavily washed with yellow than those taken at other times.

For some reason this flycatcher is not a common bird in this region. It is confined in the main to the foothills section, a few straggling down into the coastal plain. The birds frequent open woodland or cultivated lands, roadsides, and the borders of streams, perching high up in the trees, and in their movements are very sluggish. The call-note is rather mournful in character.

319. *Elænia viridicata pallens* (Bangs).

Myiopagis placens (not *Elainea placens* Sclater) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 148 (Bonda and Minca).

Myiopagis placens pallens BANGS, Proc. New England Zool. Club, III, 1902, 85 ("Santa Marta"; orig. descr.; type now in Mus. Comp. Zool.; crit.).—THAYER and BANGS, Bull. Mus. Comp. Zool., XLVI, 1905, 151, in text ("Santa Marta"; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 400 (diag.; range; ref. orig. descr.).

Elaenia viridicata placens VON BERLEPSCH, Ornith., XIV, 1907, 427 ("Santa Marta" and Bonda, ex Bangs and Allen; crit.; references).

Elaenia pallens BRABOURNE and CHUBB, Birds S. Am., I, 1912, 291 (ref. orig. descr.; range).

Myiopagis viridicata pallens CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 457, 459 (Bonda; crit.).

Additional records: La Concepción (Brown).

Fifteen specimens: Mamatoco, La Tigrera, and Don Diego.

Elænia viridicata, or, as it has been known until recently, *Myiopagis placens*, is a species which seems to have suffered unduly at the hands of systematic ornithologists, having been split up into a number of barely recognizable races. The propriety of formally recognizing

these slight variations may be seriously questioned, although their existence may be admitted. Mr. Bangs, in describing the Santa Marta bird under the name *pallens*, compared it with the Central American form, *accola*, which is itself barely separable from *placens* of Mexico. With an ample series of *accola* from Costa Rica (including several specimens from Mr. Bangs' collection) available for comparison in the present case, it appears that *pallens* differs from that form merely in the more uniformly yellowish under parts, there being less grayish shading on the throat and breast, and less of the streaked appearance. The upper parts also are a trifle purer green, but the alleged difference in the color of the sides of the crown, upon which Dr. Chapman lays so much stress, we are entirely unable to appreciate. On the other hand, *pallens* is even closer to true *viridicata*, as represented in the Carnegie Museum collection by twelve specimens from Bolivia and Argentina, differing therefrom only in the very slightly paler color of the upper parts and the paler, more yellowish, less olivaceous gray shading of the breast. These differences are not well marked, and are bridged over by individual variation, but in deference to the views of other authors they may be held to be of subspecific value, at least provisionally.

A Tropical Zone species, confined entirely to the lowlands, and not recorded as yet from the west or south side of the Sierra Nevada, although its general range is known to extend up the Magdalena River at least as far as Honda. It is by no means a rare bird in its chosen haunts, which seem to be confined to woodland along the streams.

320. *Elænia gaimardii bogotensis* von Berlepsch.

Myiopagis macilvainii (not *Elænea macilvainii* Lawrence) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").

Myiopagis gaimardi (not *Muscicapara gaimardii* D'Orbigny) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 148 (Bonda).

Elaenia gaimardi bogotensis VON BERLEPSCH, Ornith., XIV, 1907, 421, 447 ("Santa Marta" and Bonda).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 908 ("Santa Marta"; ref. orig. descr.).

Elainopsis gaimardii gaimardii RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 800, in text ("Santa Marta"; meas.; crit.).

Twenty-six specimens: Bonda, La Tigrera, Don Diego, and Dibulla.

This form was described from a "Bogotá" skin in the collection of von Berlepsch, Santa Marta specimens being considered the same.

The present fine series amply confirms its subspecific distinctness as compared with birds from Venezuela and Trinidad, from which it differs in its brighter coloration, both above and below. But there is considerable variation in the color of the crown-spot, which in some specimens is practically pure white, and in others is more or less yellow-tinged, so that it is doubtful if too much reliance should be placed on this character, given by the describer as diagnostic. In no case, however, is the crown-spot lemon yellow, as in *E. gaimardii macilvainii*, which (as shown by a comparison in series) is clearly conspecific, replacing the present form along the Caribbean coast to the westward. It is worthy of remark that Dr. Chapman failed to find any member of this group in the region covered by his explorations, but the Carnegie Museum has a few specimens of *bogotensis* from the interior of Colombia and Venezuela, showing that it is not strictly a littoral form, although doubtless confined to the Tropical Zone.

This flycatcher was present in small numbers in the lower foothills back of Santa Marta, but was more abundant in the humid forests of the northeast coast. It is partial to the trees along the creeks and streams, keeping rather high up, and is very active, although quiet.

321. *Elænia gaimardii macilvainii* Lawrence.

Four specimens: Fundación and Valencia.

Upon comparing these examples with a series of *macilvainii* from near the type-locality they prove referable here rather than to *bogotensis*, having the crown-spot lemon yellow. The occurrence of two different races on the two sides respectively of the Sierra Nevada is most interesting, although in line with what is known of the distribution of certain other species.

322. *Elænia pudica pudica* Sclater.

Elania browni BANGS, Proc. Biol. Soc. Washington, XIII, 1898, 158 (Pueblo Viejo; orig. descr.; type now in Mus. Comp. Zool.; meas.), 175 (San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 78 (San Sebastian, El Mamon, Paramo de Macotama, and La Concepción; local range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 147 (El [San] Lorenzo, El Libano, and Valparaiso; [?] Minca and Bonda; crit.).—SHARPE, Hand-List Birds, III, 1901, 122 (ref. orig. descr.; range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 426 (diag.; references), 897 (crit.).

Elania frantzii pudica VON BERLEPSCH, Ornith., XIV, 1907, 416, 447 (Santa Marta references and localities; syn.; crit.).

Elania pudica pudica CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 457 ("Santa Marta Mountains"; crit.).

Additional records: San Francisco, Chirua (Brown).

Twenty-two specimens: San Lorenzo, Cincinnati, Sierra Nevada de Santa Marta (8,000 feet), Las Vegas, San Miguel, and Heights of Chirua.

As shown by von Berlepsch, *E. browni* Bangs, based on specimens from the Santa Marta region, is a synonym of *E. pudica* Sclater, described from "Bogotá," but this author was certainly mistaken in making the latter conspecific with *E. frantsii* Lawrence of Central America, as has already been pointed out by Mr. Ridgway. Dr. Chapman, on the other hand, considers that it will eventually prove to be conspecific with *E. brachyptera* von Berlepsch. Occasional specimens show indications of the white crown-spot so well developed in that form. In juvenal dress, illustrated by No. 38,115, Cincinnati, August 21, the general colors are much duller, the upper surface being wholly dull brown, with no trace of olive, the upper tail-coverts and rectrices tipped with buffy, while the lower parts are dull white, the sides of the breast shaded with olive, and a very faint yellowish median stripe on the breast and abdomen.

"The distribution of the two closely related species, *E. browni* [= *pudica*] and *E. sororia* [= *albivertex*], of the Sierra Nevada de Santa Marta is quite interesting. *E. browni* occurs at much higher altitudes than *E. sororia*, Mr. Brown having taken it at 12,000 feet (El Paramo de Macotama). The highest he has found *E. sororia* is 7,000 feet (one example from Chirua). At many stations they occur together. At La Concepcion, 3,000 feet, Mr. Brown took a series of forty odd examples of *E. sororia* and only four of *E. browni*, from thence upwards *sororia* becomes rarer and rarer, until 7,000 feet altitude is reached, where it ceases altogether and above which *E. browni* occurs alone" (Bangs). With this statement the experience of the writer in the main agrees. On the San Lorenzo the species ranges from about 4,000 to 7,000 feet, rarely straggling beyond these limits in either direction. In the Sierra Nevada, however, its range is a little more extensive, dropping down to about 3,000 feet and running up to nearly 9,000 feet. It is most abundant everywhere between about 5,000 and 7,000 feet, frequenting open spots in the forest, the edge of the woodland, and partly bare ridges, and preferring the lower trees and shrubbery to the higher trees.

323. *Elania chiriquensis albivertex* von Pelzeln.

Elania sororia BANGS, Proc. Biol. Soc. Washington, XII, 1898, 175 (Palomina [type-locality] and San Miguel; orig. descr.; type now in coll. Mus. Comp. Zoöl.; meas.; crit.).—BANGS, Proc. New England Zoöl. Club, I, 1899, 78, in text (Chirua and La Concepción; local range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121 (Bangs' record).—BANGS, Auk, XVIII, 1901, 29, in text (crit.).—SHARPE, Hand-List Birds, III, 1901, 122 (ref. orig. descr.; range).—THAYER and BANGS, Bull. Mus. Comp. Zoöl., XLVI, 1905, 152, in text (crit.).

Elanea pagana sororia ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 147 (Bonda, Minca, and Santa Marta; crit.).

Elania albivertex VON BERLEPSCH and HELLMAYR, Journ. f. Orn., LIII, 1905, 2 (Sierra Nevada de Santa Marta; syn.; crit.).—THAYER and BANGS, Bull. Mus. Comp. Zoöl., XLVI, 1906, 218 ("Santa Marta"; crit.).—VON BERLEPSCH, Orn. XIV, 1907, 400, 446 (Santa Marta references and localities; syn.; crit.).

Elania chiriquensis chiriquensis (not of Lawrence) RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 432 (La Concepción and Palomina; meas.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 455 (Santa Marta region; faunal range).

Thirty-three specimens: Mamatoco, Cincinnati, La Tigrera, Minca, San Lorenzo, Pueblo Viejo, and Las Taguas.

The first specimens of this *Elania* received from the Santa Marta region by Mr. Bangs were described by him as a new species, *E. sororia*. At that time the genus was involved in such hopeless confusion that it is little wonder that Mr. Bangs failed to identify his bird with any described form, and it was not until 1905 that it was placed with *E. albivertex* by Messrs. von Berlepsch and Hellmayr, this allocation being emphasized by the first-named author in his elaborate review of the genus which appeared in 1907. At that time he commented especially on the peculiarities shown by the series of specimens from southwestern Costa Rica in his collection, remarking that they were more greenish above and more yellowish below—characters well shown by the three adult skins from this same region in the collection of the Carnegie Museum. Although von Berlepsch suspected the identity of *E. chiriquensis* Lawrence with *E. albivertex* von Pelzeln, he did not formally adopt the former (and older) name, preferring to await the reëxamination of Lawrence's type. We are assured by Mr. Bangs, however (Auk, XXIV, 1907, 301), that the type "agrees entirely" with examples from southwestern Costa Rica, in which case

the South American birds examined (including, besides those above specified, a series from various localities in Venezuela and other sections of Colombia) certainly represent a form subspecifically distinct, differing as they do in their much paler, duller yellow under parts, grayer breasts, etc. Assuming that Brazilian and Colombian birds are the same, von Pelzel's name *albivertex* may be retained for this southern form.

The specimens from Minca, taken in June, are much duller than those from Pueblo Viejo, shot in March; the difference is of course entirely seasonal. But not even the freshest specimens are as brightly yellow below as the Costa Rican series.

A rare bird in the lowlands, but common between 1,200 and 2,500 feet, wherever open or cultivated lands are found, preferring savannas dotted with low trees. Mr. Brown secured one specimen at Chirua, at "7,000 feet," but the altitude here assigned is clearly a mistake. Like all of the genus, this species is largely a fruit-eater.

324. *Elænia flavogaster flavogaster* (Thunberg).

Elainea pagana SCLATER, Cat. Am. Birds, 1862, 216 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 124 (Minca).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 137 (Santa Marta and Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").

Elænia pagana BANGS, Proc. New-England Zool. Club, I, 1899, 78 (El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 147 (Bonda, Minca, Onaca, Santa Marta, and Cacagualito); XXI, 1905, 285 (Bonda; descr. nest and eggs).

Elænia flavogaster VON BERLEPSCH, Ornith., XIV, 1907, 384 (Santa Marta references and localities).

Elænia martinica flavogastra RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 430, footnote (Santa Marta; meas.).

Additional records: La Concepción (Brown).

Eighteen specimens: Bonda, Minca, Cincinnati, La Tigrera, Tierra Nueva, and Fundación.

These agree with specimens from other parts of the range of the species in northern South America, and run through the same variations in color according to season, worn breeding birds always being duller than those in fresh plumage.

This *Elænia* ranges from near sea-level up to 4,000 feet, but is more common between 1,000 and 2,500 feet. Its haunts and habits are practically the same as those of *E. chiriquensis albivertex*. Dr. Allen

describes a nest collected by Mr. Smith at Bonda on April 16 as "suspended against a small upright branch, to which it is fastened strongly on one side at the top only. It has the form of an inverted, short-necked retort, with the entrance at the bottom, on one side, produced to form the neck of the retort. The exterior is composed of a thin layer of stiff, fine, black vegetable fibers, by means of which and a few coarse grass leaves it is bound on one side to the upright twig that gives it support. The inner part or main body of the nest is woven of coarser vegetable fibers of a different color, with much cottony plant down woven in around the entrance. The small leaves are attached to the exterior, being held in place by the horse-hair-like fibers that compose the exterior.

". . . The eggs [two] are grayish white, nearly covered with specks and blotches of very dark brown and lavender, the egg thus greatly resembling those of the North American Oven-bird (*Sciurus aurocaphillus*). The form of the eggs is short ovate."

325. *Sublegatus glaber* Sclater and Salvin.

Sublegatus glaber WYATT, Ibis, 1871, 333 (Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 147 (Bonda).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 421 (Santa Marta localities and references; meas.).

Twelve specimens: Bonda, Don Diego, Mamatoco, Punto Caiman, Dibulla, and Rio Hacha.

Variation in this species mainly affects the color of the posterior lower parts, which are much brighter yellow in fresh-plumaged birds taken in September and October.

In its local distribution this species is strictly littoral, not reaching the foothills at all, nor has it been detected on the south side of the Sierra Nevada. It is found chiefly in the fringe of woodland along the streams, and in the more open forest, but is not a common bird.

326. *Phyllomyias griseiceps griseiceps* (Sclater and Salvin).

Sublegatus incanescens (not *Muscipeta incanescens* Wied) SALVIN and GODMAN, Ibis, 1880, 124 (Minca; crit.).

Sublegatus platyrhynchus (not *Phyllomyias platyrhyncha* Sclater and Salvin) SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 158 (Minca; crit.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136, in text ("Santa Marta", *ex* Sclater; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 147 (Salvin and Godman's reference).

Tyranniscus griseiceps BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 148 (Minca).

Phyllomyias griseiceps VON BERLEPSCH and HELLMAYR, Journ. f. Orn., LIII, 1905, 5, in text (Minca; syn.; crit.).—HELLMAYR, Nov. Zool., XV, 1908, 48 (crit.).

Phyllomyias griseiceps griseiceps CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIV, 1915, 646, in text (Minca; meas.; crit.); XXXVI, 1917, 450 (Minca; crit.).

Two specimens: La Tigrera.

Evidently a rare species in this region, and confined to the lower foothills in the "dry forest" section of the Tropical Zone. Simons secured a single specimen at Minca, where also two were secured by Mr. Smith's collectors. Mr. Brown got one specimen at "Santa Marta," which in this case may mean anywhere from sea-level up to several thousand feet. Only two individuals were seen by the writer; these were a pair, shot in the woodland along the Tamocal Creek a short distance below La Tigrera.

327. *Camptostoma pusillum pusillum* (Cabanis and Heine).

Ornithion pusillum BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 148, part (Bonda).

Ornithion inerme (not of Hartlaub) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 149 (Bonda).

Camptostoma pusillum pusillum RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 418, footnote ("Santa Marta"; meas.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 452 ("Santa Marta"; crit.).

Fifteen specimens: Bonda, La Tigrera, Fundación, Dibulla, Tucurínca, and Rio Hacha.

These agree in all respects with topotypical Cartagena skins. Males average conspicuously larger than females in this form. Dr. Allen, indeed, identified the males in the series he examined as *Ornithion inerme*, and the females as *O. pusillum*, including among the latter, however, a specimen of *Phaenomyias tenuirostris* (Cory).

A rare bird, but found sparingly throughout the whole of the drier parts of the lowlands, wherever heavy forest does not exist, being partial instead to open woodland and shrubbery.

328. *Phæomyias murina incomta* Cabanis and Heine.

Phyllomyias semifusca SCLATER, Proc. Zool. Soc. London, "1861," 1862, 383, pl. 36, fig. 1 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.; crit.).—SCLATER, Cat. Am. Birds, 1862, 214 ("Santa Marta").—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 48 (range).—SALVIN and GODMAN, Ibis, 1879, 201 (Atanquez).

Elainea semifusca GRAY, Hand-List Birds, I, 1869, 355 (Santa Marta, in range).

Myiopatis semifusca SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 123 ("Santa Marta" and Atanquez).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 149 (Bonda and Cacagualito).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 420, footnote, in text (Santa Marta; crit.).

Phæomyias murina incomta VON BERLEPSCH and HELLMAYR, Journ. f. Orn., LIII, 1905, 3 (Sierra Nevada de Santa Marta; syn.; crit.).—VON BERLEPSCH, Nov. Zööl., XV, 1908, 135 ("Santa Marta"; crit.).

Thirty specimens: Bonda, Mamatoco, La Tigrera, Minca, Rio Hacha, Arroya de Arenas, and Valencia.

A specimen of this dull-colored bird, supposed to have come from Santa Marta, fell into Sclater's hands in 1861, and was described as new under the name *Phyllomyias semifusca*, this specific name remaining in current use until 1902, when it was definitely shown by von Berlepsch (*Novitates Zoologicae*, IX, 1902, 41), to be a synonym of *Elainea incomta* Cabanis and Heine, described from Cartagena, which was later found to be conspecific with the *Platyrhynchus murinus* of Spix. At the same time von Berlepsch established a new genus, *Phæomyias*, to include this species.

Sclater's figure, it may be remarked in passing, is a very poor representation. In fresh plumage the yellow of the under parts is more pronounced, and the brown of the back richer. In juvenal dress the species is much duller and paler, with scarcely a trace of yellow below.

This bird is found mainly in the drier parts of the semi-arid lowlands and lower edge of the foothills of the Tropical Zone. Simons, however, took it at Atanquez, at 2,700 feet, on the south slope of the Sierra Nevada, and the writer has taken it as high up as 2,000 feet at Minca, but it is more common below 1,000 feet. Its favorite haunts are open woodland, the edges of savannas, in low trees and shrubbery, and roadsides.

329. *Phæomyias tenuirostris* (Cory).

Ornithion pusillum (not *Myiopatis pusilla* Cabanis and Heine) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 148, part ("Bonda" [i.e., Cienaga]).

Seventeen specimens: Gaira, Dibulla, and Rio Hacha.

Through the courtesy of Mr. Cory we have been able to compare the above specimens, together with a small series from Venezuela, with the type of his *Camptostoma pusillum tenuirostris* (sic), described in the *Field Museum Ornithological Series*, I, 1913, 289, and find them absolutely identical. But this bird cannot be a subspecies of *Camptostoma pusillum*, the bill being so very different, and it seems to be referable instead to the genus *Phæomyias*. Possibly it may have been already described under some other name, but if so we fail to find it.

A Tropical Zone species, found sparingly in the semi-arid lowlands contiguous to Santa Marta, but more abundantly in the humid forest area of the northeast coast, and also, strange to say, around Rio Hacha and Loma Larga. It was not met with on the west side of the Sierra Nevada, nor is there any record for the foothills. Mr. Smith sent in a single specimen (No. 73,571, Collection American Museum of Natural History, Cienaga, September 10, 1898), which was inadvertently recorded by Dr. Allen as "*Ornithion*" *pusillum*. Its local habitat is open woodland, roadsides, and shrubbery in general.

330. *Microtriccus brunneicapillus dilutus* Todd.

Eleven specimens: La Tigrera, Don Diego, and Dibulla.

The type of this supposed race, described by the writer a few years ago (*Proceedings Biological Society of Washington*, XXVI, 1913, 171), came from the north coast of Venezuela. It differs from all the Central American specimens so far examined in its paler, duller coloration, especially below, with less greenish shading on the sides, but there is nothing to show that a series from this locality would be exactly the same. The Santa Marta series are nearer the Venezuelan skin, although varying somewhat among themselves. The subspecies is not strongly marked, but may be allowed to stand, at least provisionally.

No. 44,732 (Dibulla, February 24) is in juvenal dress—white below, faintly tinged with buffy yellowish, the pileum grayish brown, passing into olivaceous green on the back, and the remiges and rectrices edged externally with buffy.

This diminutive species was taken only in the lower foothills back of Santa Marta, and in the lowlands around Dibulla and Don Diego, being most numerous at the latter place, but rare everywhere. It frequents open woodland and shrubbery.

331. *Tyranniscus nigrocapillus flavimentum* Chapman.

Tyranniscus nigricapillus (not *Tyrannulus nigrocapillus* Lafresnaye) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 98 (La Concepción and Chirua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 148 (El Libano and San Lorenzo).

Tyranniscus nigricapillus flavimentum CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 154 (San Lorenzo; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 246 (ref. orig. descr.).

Ten specimens: San Lorenzo, San Miguel, Cerro de Caracas, and Heights of Chirua.

A well-marked form, as shown by an independent comparison of this fresh material.

Four specimens were taken on the San Lorenzo, in the heavy forest, between 5,000 and 7,000 feet. It is a rare bird there, or at least seldom seen, perhaps from its habit of keeping high up in the trees. Mr. Smith's collectors got but four specimens here. In the Sierra Nevada it proved to be equally scarce, only six specimens in all being taken, and it seems that Mr. Brown did not succeed in getting more than two. It ranges somewhat higher here, running up to 9,000 feet on the Cerro de Caracas. It is thus a species characteristic of the Subtropical Zone in this region.

332. *Tyranniscus chrysops minimus* Chapman.

Tyranniscus chrysops (not *Tyrannulus chrysops* Sclater) SALVIN and GODMAN, Ibis, 1880, 124 (Minca).—VON BERLEPSCH, Journ. f. Orn., XXXII, 1884, 301 ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 135 (Minca and Sierra Nevada de Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 175 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 148 (Minca).

Tyranniscus chrysops minimus CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 153 (Minca; orig. descr.; type in coll. Am. Mus. Nat. Hist., meas.; crit.); XXXVI, 1917, 454, in text (Santa Marta region; range).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 246 (ref. orig. descr.).

Additional records: La Concepción, San Francisco (Brown).

Nine specimens: Minca, Don Diego, Pueblo Viejo, and Chirua.

MEASUREMENTS.

No.	Sex.	Locality.	Date.	Wing.	Tail.	Bill.	Tarsus.
42377	♂	Minca	June 25, 1913	52	45	8	16
44457	♂	Don Diego	Jan. 19, 1914	52	44	8	15
44840	♂	Pueblo Viejo	March 6, 1914	53	45	8	17.5
42378	♀	Minca	June 25, 1913	48	40	8	14.5
44331	♀	Don Diego	Jan. 14, 1914	46	40	8	14
44604	♀	Don Diego	Feb. 2, 1914	47	38	7.5	15
Five adult males of <i>T. chrysops chrysops</i> , average ...				57.6	49.6	8.8	17.6
Three adult females of <i>T. chrysops chrysops</i> , average				50	41	8.1	15.5

The existence in the Santa Marta region of a small race of *Tyranniscus chrysops* is a very interesting circumstance, but is apparently well substantiated by the material at hand. The form was based by Dr. Chapman on the four specimens from Minca forwarded by Mr. Smith, all unfortunately unsexed. As pointed out by the describer, sexual variation in size in this species (as in several others of this generic group), is considerable, and must be taken into account in making comparisons, especially in a case like the present, where a separation is attempted on this character alone, the color admittedly being the same. Judging from the measurements presented herewith it seems very likely that all of the Smith specimens must have been females, but even on that supposition it is still possible to discriminate the Santa Marta bird on the ground of size alone, and although the difference is not so marked as it was at first believed, it is nevertheless quite obvious in a series. Measurements of the total length, taken in the flesh by the collector, also bear out the above remarks.

The bird belongs to the Tropical Zone, preferring the foothills between 1,500 and 3,000 feet, but dropping down to sea-level in the humid forest of the northeast coast. San Francisco (4,000 feet) appears to be the highest point at which it has been recorded. Like the other species of this genus, its favorite haunts are in the forest, keeping rather high up in the trees.

333. *Tyranniscus improbus* Sclater and Salvin.

Othaca olivacea ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 152 (Valparaiso; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—SHARPE, Hand-List Birds, III, 1901, 93 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1075 ("Santa Marta," in range; ref. orig. descr.).—VON BERLEPSCH, Ornith., XIV, 1907, 470 (crit.).

Tyranniscus improbus HELLMAYR, Nov. Zööl., XX, 1913, 242 (Valparaiso; crit.; syn.).

Five specimens: Cincinnati and Sierra Nevada de Santa Marta (8,000 feet).

Mr. Smith was the first collector to meet with this species in the Santa Marta region, securing five specimens at Valparaiso (Cincinnati) in April, 1899. These were duly described as a new species of *Octhaeca* by Dr. Allen, and it was not until 1913 that Mr. Hellmayr, after an examination of the type, discovered that they were the same as *Tyranniscus improbus* of Sclater and Salvin, a species described from Merida, Venezuela, and soon afterward traced to the Andes of Colombia. The specimens above recorded agree well with examples from both of these regions in the collection of the Carnegie Museum. As in other species of this genus, there is a sexual difference in size of considerable amount. The nearest ally of the species would seem to be *Tyranniscus petersi* von Berlepsch of Venezuela.

Two females of this species were taken on the north spur of the Sierra Nevada next to the San Lorenzo, at about 8,000 feet, and three males at Cincinnati, near which place also all of Mr. Smith's specimens were secured. All were found in the heavy forest, rather high up. The species seems to belong to the Subtropical Zone.

334. ***Tyrannulus elatus panamensis*** Thayer and Bangs.

Tyrannulus elatus (not *Sylvia elata* Latham) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 148 (Bonda).

Tyrannulus elatus reguloides (not of Ridgway, 1888) RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 794 (Bonda; meas.; crit.; references).

Three specimens: Mamatoco, Don Diego, and Dibulla.

After having examined, in connection with the above, a series of twenty-four specimens, including the type of *T. reguloides* and one other Brazilian skin, two other specimens from northern Colombia, two topotypes of *T. reguloides panamensis*, the Cayenne skin handled by Mr. Ridgway, ten additional authentic Cayenne specimens, two from "Guiana," and five "Bogotá" skins, we have reached the following conclusions. First, *reguloides* is not a valid race, the name having been based on an imperfect specimen, probably a female, which was compared with a Cayenne skin which looks as if it had been long exposed to the light. The series now available from Cayenne, as well as the two Guiana specimens, are indistinguishable from an authentic Brazilian specimen from near the falls of the Rio Purús, nor can these be distinguished in turn from the "Bogotá" skins.

Second, the Panama birds, allowing for their state of plumage, agree best with the specimens from the north Colombian coast in having the abdomen brighter, purer yellow than the Cayenne birds, the breast and sides paler green, and the throat rather whiter, less grayish; the back is a little brighter green, and the sides of the pileum more distinctly grayish. There is thus no other course open except to recognize *panamensis*, and to place *reguloides* as a synonym of *elatus*. The question of the distribution of the races of this species is thus considerably simplified.

This appears to be a Tropical Zone form, evidently restricted to the lowlands, and very rare. Mr. Smith took two at Bonda, and the writer one each at the three localities listed above.

335. *Serpophaga cinerea cana* Bangs.

Serpophaga cinerea grisea (not of Lawrence) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 97 (Chirua, San Miguel, and La Concepción; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 149 (Bangs' reference).

Serpophaga grisea SHARPE, Hand-List Birds, III, 1901, 112 ("Santa Marta," in range).

Serpophaga cinerea cana BANGS, Proc. Biol. Soc. Washington, XVII, 1904, 113 (Chirua [type-locality], La Concepción, and San Miguel; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—VON BERLEPSCH, Ornith., XIV, 1907, 488 (ref. orig. descr.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 397 (diag.; range; references).

Serpophaga cana BRABOURNE and CHUBB, Birds S. Am., I, 1912, 282 (ref. orig. descr.; range).

This is one of the species of which Mr. Carriker failed to secure specimens in the Santa Marta region, although an ample series is available from Venezuela and other parts of Colombia, and Mr. Bangs has very courteously loaned his type-series for use in this connection. Comparison with birds from Panama and Costa Rica shows that the difference in general coloration, on which reliance has mainly been placed in discriminating *cana* and *grisea*, is practically a negligible quantity, and is certainly of no diagnostic value. The slight difference in average size is scarcely worthy of mention, either. In fact, the only difference of any account lies in the color of the wing-bands and external margins of the inner secondaries, which are whiter and broader, and therefore more conspicuous, in *cana* than in *grisea*. It has not been possible as yet to compare either of these with true *cinerea*.

The four specimens of this bird secured by Mr. Brown were taken at altitudes ranging from 3,000 feet at La Concepción up to 5,500 feet at San Miguel, and the species appears to be here, as elsewhere, characteristic of the Subtropical Zone.

336. *Inezia caudata intermedia* Cory.

Seven specimens: Fundación, Mamatoco, Dibulla, Arroya de Arenas, and Valencia.

These, together with a series from the coast region of Colombia west of the Magdalena River, agree closely with the type of this race, kindly loaned by Mr. Cory, and described from near Maracaibo, Venezuela (*Field Museum Ornithological Series*, I, 1913, 289). It is a pale race, differing from typical *caudata* (as represented in the collection of the Carnegie Museum by a large series from French Guiana) in being more olivaceous, less brownish above, with the lower parts more uniform, less shaded with buffy, and brighter yellow, the chin paler. The other characters mentioned by the describer do not seem to hold good, but the form appears to be an excellent one.

The generic name *Inezia* Cherrie (*Museum Brooklyn Institute Science Bulletin*, I, 1909, 390) may provisionally be accepted for this species, but the writer is not prepared to indorse its reference to the Cotingidæ, for the reasons stated on page 321.

This little flycatcher was taken only in the lowlands, and apparently ranges over the whole of the littoral Tropical Zone, although evidently rare. It was found only in the forest, and is a bird of inconspicuous habits.

337. *Hapalocercus meloryphus meloryphus* (Wied).

Hapalocercus paulus BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 96 (Chirua [type-locality], La Concepción, and San Miguel; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 150 (Bangs' reference).—SHARPE, Hand-List Birds, III, 1901, 109 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1075 ("Santa Marta," in range; ref. orig. descr.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 339, footnote (crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 279 (ref. orig. descr.; range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 444 (Chirua and La Concepción; meas.; crit.).

Hapalocercus meloryphus paulus VON BERLEPSCH, Ornith., XIV, 1907, 487 (crit.).

Seven specimens: Don Diego, Pueblo Viejo, and Fonseca.

Sclater (*Catalogue of the Birds in the British Museum*, XIV, 1888, 93) diagnoses *Haplocercus meloryphus* as having the sides of the head ashy brown, while in *H. fulviceps* these parts are fulvous. Evidently misled by this, Mr. Bangs compared his Santa Marta specimens of *Haplocercus* with *H. fulviceps*. The type of *H. meloryphus*, kindly loaned by Dr. Chapman, is in poor condition, being much faded and worn, but the buffy sides of the head are clearly indicated nevertheless. A specimen from the Rio Parana (No. 20,993, Collection U. S. National Museum) is similar, as well as a series of no less than fifteen specimens from Bolivia, northern Argentina, and Venezuela in the collection of the Carnegie Museum. After very careful comparison of the entire series we can find no sufficient characters for dividing it, and do not believe that *paulus* is worthy of recognition, even as a race. The amount of rufescent edging on the wings and tail is a variable feature, probably depending on age and season.

According to von Berlepsch *H. fulviceps* is only subspecifically separable from the present form.

Mr. Ridgway suggests that *Haplocercus* may belong to the Formicariidae, but for the purposes of this paper we propose to retain it provisionally in the Tyrannidae.

Evidently this is a rare bird. The one taken at Don Diego was shot in a tract of waste land, overgrown with shrubbery and weeds, near the beach. The three taken at Pueblo Viejo were all secured in the same place—a tract of second-growth and shrubbery on the outskirts of the village. Mr. Smith sent in two specimens from Don Diego also. Mr. Brown claims to have taken it in the Sierra Nevada at an altitude of 7,000 feet, but it may well be doubted if it regularly goes so high up, being a bird of the Tropical Zone.

338. *Rhynchocyclus sulphurescens exortivus* Bangs.

Rhynchocyclus sulphurescens (not *Platyrhynchus sulphurescens* Spix) SCLATER, Cat. Am. Birds, 1862, 220 ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 168 ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta"), 176 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 146 (Bonda and Minca).

Rhynchocyclus sulphurescens exortivus BANGS, Proc. Biol. Soc. Washington, XXI, 1908, 163 (La Concepción; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—HARTERT and GOODSON, Nov. Zoöl., XXIV, 1917, 415 (crit.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 434, in text ("Santa Marta"; crit.).—CORY, Proc. Biol. Soc. Washington, XXXII, 1919, 218 (ref. orig. descr.; range; diag.).

Rhynchocyclus exortivus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 271 (ref. orig. descr.; range).

Additional records: San Francisco, Pueblo Viejo (Brown).

Nineteen specimens: Mamatoco, Cincinnati, La Tigrera, Fundación, Don Diego, Dibulla, Tucurinca, and Arroya de Arenas.

Typical *Rhynchocyclus sulphurescens* from southeastern Brazil is a large, richly colored, dark bird—more greenish, less yellowish below, and darker green above than the Santa Marta bird, to which Mr. Bangs has accordingly applied the name *exortivus*. It would seem to be sufficiently distinct also from *R. sulphurescens assimilis* von Pelzeln, judging from the description alone. Recently Messrs. Hartert and Goodson have reviewed the races of this species, reaching conclusions which in the light of our material we are unable entirely to accept. Our series shows that there is considerable individual and seasonal variation in the depth of the yellow below, the gray of the pileum, etc., and doubtless if these authors had had a good series of Santa Marta specimens for comparison they would not have been led to describe so many additional forms. (Compare, in this connection, Mr. Cory's recent paper, above cited.)

This species does not range above the Tropical Zone, and is most numerous in the foothills, although it is not so abundant as *R. flaviventris aurulentus*. While it was present in small numbers at Don Diego and Dibulla on the north coast, it was commoner between Mamatoco and La Tigrera. It keeps higher up in the trees than the other species, and prefers either shady forest or woodland along streams.

339. *Rhynchocyclus flaviventris aurulentus* Todd.

Rhynchocyclus flaviventris (not *Muscipeta flaviventris* Wied) SALVIN and GODMAN, Ibis, 1880, 124 (Santa Marta and Arihueca).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 171 (Santa Marta and Arihueca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 146 (Bonda and Cacagualito); XXI, 1905, 284 (Bonda; descr. nest and eggs).

Rhynchocyclus flaviventris flaviventris HELLMAYR, Nov. Zoöl., XVII, 1910, 296 (Santa Marta, in range).—CORY, Proc. Biol. Soc. Washington, XXXII, 1919, 222 (Santa Marta localities; crit.).

Rhynchocyclus flaviventris aurulentus TODD, Proc. Biol. Soc. Washington, XXVI, 1913, 171 (Mamatoco; orig. descr.; type in coll. Carnegie Mus.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 437 ("Santa Marta"; crit.).

Thirty-five specimens: Bonda, Cacagualito, Mamatoco, La Tigrera, Fundación, Tucurinca, Santa Marta, and Arroya de Arenas.

In originally describing this form it was compared with specimens from Venezuela and Trinidad, supposed (on the authority of Mr. Hellmayr) to be typical. A series of fresh specimens from Bahia, Brazil (the type-locality), however, shows that these more northern birds are by no means typical, and probably constitute a recognizable race. Hence the diagnosis of *aurulentus* will have to be modified somewhat. Above it is slightly brighter, more yellowish green than *flaviventris*, but this difference is inconsequential. Below it is obviously paler, purer, and more uniform yellow, the sides and flanks with scarcely any greenish tinge, and the throat and breast with much less gamboge yellow shading. These differences are well marked when series are compared. With the other described forms it requires no comparison, since these are said to differ in having greenish instead of yellowish wing-coverts, and in other particulars. The range of the new form is of course not confined to the Santa Marta region, but extends to the westward in the littoral area.

An inhabitant of the semi-arid lowlands and lower foothills, up to 1,500 feet at least. It was accordingly not found in the humid forests about Don Diego and Dibulla, but is common in the vicinity of Fundación, in the drier foothills. It prefers open woodland and shrubbery, and is always seen near the ground.

Mr. Smith sent in no less than nineteen nests of this species, all from Bonda, and taken at dates ranging from April 22 to June 6. The majority had two eggs each, but several had three.

"The nest is retort-shaped, hung apparently from the end of a slender, drooping branch, with the entrance at the bottom. It is compactly woven of soft flexible fibers of dead grass, coarse at the top and superficially but, for the most part, very fine and soft, in some nests almost as fine and soft as tow. The entrance forms a short neck at the bottom on one side, through which the bird passes upward to the nest proper, which occupies the bulbous portion of the bottom. The nest is supported and fastened to the branch by quite a long, slender, tapering neck. The nests vary in vertical length from about six inches to a foot, according to the length of the neck, with a diameter across the bulbous portion, near the bottom, of about four to six inches.

"The eggs, usually two or three to the set, have the ground-color creamy white, with a few small scattered, roundish spots of dark chocolate, varying from reddish-brown to blackish-brown, clustered mostly about the larger end. The eggs are rather pointed ovate, and measure in the average about 14×7.5 ."

In connection with a nest of this species received by the Carnegie Museum Mr. Smith sends the following interesting note: "After my collections were sent I found that this bird generally if not always makes its nest within a foot or two of the nest of a small yellow wasp. I had not noticed this before, as I was not personally working on the nest collection near Bonda, but I have now verified the fact in a number of cases, and it is well known to the hunters. The wasp, a common species of the dry forest region, appears to fly at night as well as during the day; at any rate, it is sometimes attracted by lights and I have often seen it when out 'mothing' at night. If this is the case the vicinity of the wasp's nest must be a decided protection against the nocturnal opossum rats. As far as I have observed the bird builds on a twig farther out on a branch which holds the wasps' nest, and consequently a small animal to reach the bird's nest would have to pass directly over that of the wasps. The wasps do not appear to be in any way dependent on the birds, as their nests are often found alone."

340. *Craspedoprion æquinoctialis flavus* Chapman.

Rhynchocycylus æquinoctialis (not *Cyclorhynchus æquinoctialis* Sclater) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 146 (Onaca).

Craspedoprion æquinoctialis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 387 (Onaca, in range).

Craspedoprion æquinoctialis flavus CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 175 (Onaca; orig. descr.; type in coll. Am. Mus. Nat. Hist.).

—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 247 (ref. orig. descr.).

Eight specimens: Mamatoco, La Tigrera, Las Vegas, Minca, Pueblo Viejo, and Don Diego.

The two specimens forwarded by Mr. Smith, both collected at Onaca, were referred by Dr. Allen to "*Rhynchocycylus*" *æquinoctialis* (Sclater), a species described from the Rio Napo, eastern Ecuador. Upon comparison with specimens coming from the same faunal region as the type these two birds proved to be recognizably distinct, being more brightly colored throughout, and were accordingly given a tri-

nomial designation by Dr. Chapman. The present series agree well with the type. It is not yet clear whether the race is confined to the Santa Marta region. It is a rare bird, ranging over the lowlands and lower foothills, rarely going as high as 2,000 feet. It is partial to the heavy forest and to woodland along streams. In its habits it is solitary and very quiet and inconspicuous.

341. *Platytricus albogularis neglectus* Todd.

Platyrrhynchus albogularis (not of Sclater) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 96 (La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 150 (Bangs' reference).

Platytriccus albogularis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 384 (La Concepción; meas.; references).

Twelve specimens: Cincinnati, Las Vegas, and Pueblo Viejo.

Platyrrhynchus albogularis Sclater was described from western Ecuador. It is a richly colored form, with much brownish suffusion both above and below. Specimens from western Colombia, although somewhat duller in color, obviously belong to the same form. But a series from the Santa Marta region are so decidedly paler and duller as to be readily separable, and with them are to be ranged specimens from the State of Boyaca in Colombia. These agree in having the upper parts in general paler olivaceous; the pileum (laterally), as well as the circumauricular region, is not so dark in color, and therefore less strongly contrasted with the surrounding parts; the under parts are markedly paler, with much less buffy and brownish suffusion, particularly on the breast and sides. All in all the birds of this region seem to constitute an excellent subspecies, recently described by the writer in the *Proceedings of the Biological Society of Washington*, XXXII, 1919, 114. Two of the specimens sexed as females show traces of the yellow crown-spot so conspicuous in the male.

This diminutive flycatcher ranges over the forested slopes of the whole region between 2,000 and 5,000 feet, or through the upper Tropical Zone. As a rule it occurs only in very small numbers, and only at Las Vegas was it found to be fairly common, in the valley below the hacienda. Its habits and habitat both render it very inconspicuous, so that it is doubtless often overlooked. It inhabits only the dark, humid forest, keeping low down in the deep shade, and is moreover very quiet, moving about in short hops through the undergrowth. Although it has a loud, harsh call-note, this is seldom heard. The nest

is a tiny cup-shaped affair placed in an upright fork not far from the ground. The eggs, however, have not been seen as yet.

342. *Atalotriccus pilaris pilaris* (Cabanis).

Colopterus pilaris SALVIN and GODMAN, Ibis, 1880, 124 (Minca).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 90 ("Santa Marta" and Minca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1888, 18 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 150 (Bonda, Minca, and Cacagualito). *Atalotriccus pilaris pilaris* RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 374 (Santa Marta localities and references).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 444 ("Santa Marta"; crit.). *Colopteryx pilaris pilaris* HELLMAYR, Rev. Française d'Orn., III, No. 22, 1911, 25 ("Santa Marta," in range).

Twenty-five specimens: Bonda, La Tigrera, Mamatoco, Minca, and Fundación.

The use of the trinomial designation in this case is questionable, since it is very doubtful if the form described under the name of *A. pilaris venezuelensis* has any real standing, while the Orinoco Valley form (*griseiceps*) seems specifically distinct. The case will be more fully discussed in another connection.

A rare bird at Rio Hacha, but fairly common in the semi-arid lowlands and foothills, extending from Santa Marta around to Fundación, being more abundant at the latter place than elsewhere. The birds keep rather low down in the shrubbery and smaller trees, and are usually found in pairs. They have a loud harsh call-note entirely out of proportion to their size, and much resembling that of certain species of *Thamnophilus*.

343. *Todirostrum sylvia superciliare* Lawrence.

Todirostrum schistaceiceps (not of Selater) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 150 (Bonda).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 367 (Bonda and "Santa Marta," in range; references). *Todirostrum schistaceiceps superciliare* CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 438 (Bonda; crit.).

Thirteen specimens: Bonda, Fundación, Mamatoco, La Tigrera, Tucurín, and Valencia.

A careful study of the available series (fifty-five skins) of the bird lately known as *Todirostrum schistaceiceps* shows that three geographic races can safely be recognized. First, there is the form rang-

ing from Mexico to Panama, in which the sides, flanks, and crissum are strongly tinged with greenish yellow. This is of course the true *Todirostrum schistaceiceps* of Sclater, described from Oaxaca, Mexico. Colombian specimens (including, besides those listed above, a number from other parts of that country), on the other hand, are markedly paler and whiter below, with the greenish yellow tinge fainter and more restricted. They agree exactly with the type of *Todirostrum superciliaris* Lawrence, kindly loaned by Dr. Chapman, and which is labelled "Carthagenas," and *not* Venezuela, as given in the original description. Then there are the Venezuelan birds, from both the north coast and the Orinoco region, which agree in having the under parts more deeply and extensively gray, the throat more decidedly flammulated, and the greenish yellow of the posterior under parts duller. This is the form described a few years ago by the writer (*Proceedings Biological Society of Washington*, XXVI, 1913, 170) under the name *Todirostrum schistaceiceps griseolum*, but Mr. Hellmayr writes that this name is unquestionably a synonym of the *Todus sylvia* of Desmarest (*Histoire Naturelle de Tanagras, des Manakins et des Todiers*, 1805, pl. 71), a species described from Cayenne (cf. Hellmayr, *Abhandlungen der Königlich Bayerischen Akademie der Wissenschaften*, Math. phys. Kl., XXVI, 1912, 89, footnote). This being the earliest name applied to any member of the group will naturally supplant *schistaceiceps* as the specific name.

Like the other members of this generic group this little flycatcher is a species of the Tropical Zone, inhabiting the lowlands from Santa Marta around to Fundación, but more numerous on the west side of the Sierra Nevada. It frequents shrubbery and woodland, keeping rather low down as a rule, and is quite tame. Most of its food is taken on the wing, in true flycatcher style. It has the same harsh note as the other species of the genus.

344. *Todirostrum nigriceps* Sclater.

Todirostrum nigriceps SCLATER, Proc. Zool. Soc. London, 1855, 66, pl. 84, fig. 1 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.; crit.); 1857, 84 ("Santa Marta"; ref. orig. descr.).—SCLATER, Cat. Am. Birds, 1862, 207 ("Santa Marta").—SCLATER and SALVIN, Proc. Zool. Soc. London, 1864, 358 ("Santa Marta").—GRAY, Hand-List Birds, I, 1869, 348 ("Santa Marta," in range).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 45 (range).—GIEBEL, Thes. Orn., III, 1877, 641 (ref. orig. descr.).—SCLATER,

Cat. Birds Brit. Mus., XIV, 1888, 72 ("Santa Marta").—SALVIN and GODMAN, Biol. Centr.-Am., Aves, II, 1888, 13 ("Santa Marta," in range).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 135 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 150 (Bonda).—SHARPE, Hand-List Birds, III, 1901, 103 (range).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 286 (Bonda; descr. nest and eggs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 366 (Bonda and "Santa Marta," in range; references).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 273 (ref. orig. descr.; range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 438 ("Santa Marta").

Sixteen specimens: Bonda, La Tigrera, Tierra Nueva, Don Diego, Fundación, and Loma Larga.

The type-specimen of this species, described by Sclater in 1855, was a specimen received from Verreaux, and supposed to have come from the vicinity of Santa Marta. Since then it has been traced northward to Costa Rica, and southward to Ecuador. In the region under consideration it is restricted in the main to the lowlands, ranging from Fundación around to Don Diego, and probably as far east as Dibulla, although not actually detected there. A single bird, however, was shot as high up as Loma Larga, at 2,500 feet. It is more abundant in the more humid parts of the lowlands, but is not common anywhere. It is more partial to the forest than the other species of *Todirostrum*, and keeps well up in the trees, where it moves around a good deal, and is easily detected when present by its loud characteristic note. Mr. Smith sent in one nest from Bonda, collected June 6, and described by Dr. Allen as a "globular nest, with the upper surface firmly attached to a twig, and the entrance on one side at the bottom, forming a slightly projecting neck. It is composed of rather fine grass-like plant fibers, a considerable layer of which is carried over the top of the twig which gives the nest its support. The whole material of the nest is soft, of a yellowish brown color, interwoven with which is more or less whitish plant down, which is mixed to a considerable extent with the soft fibrous material that constitutes the lining. . . . The [single] egg is regularly ovate, clear white, with a few yellowish brown or rust-colored specks over the larger end."

345. *Todirostrum cinereum cinereum* (Linnæus).

Todirostrum cinereum SCLATER, Proc. Zool. Soc. London, 1857, 83 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1862, 207 ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 69 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 150 (Ciénaga).

Eleven specimens: Fundación and Punto Caiman.

Santa Marta specimens, while obviously intermediate between *T. cinereum cinereum* and *T. cinereum finitimum*, are on the whole best referred to the former. Some individuals have the back clear gray, while others show more or less greenish suffusion.

Judging from the authentic records, this species is found only in the lowlands contiguous to the Cienaga Grande, up to the edge of the foothills of the Sierra Nevada, and is probably restricted to the Magdalena basin. It proved to be fairly abundant at Fundación, in waste lands and abandoned pastures, always keeping to the open in weeds and shrubbery.

346. *Oncostoma olivaceum* (Lawrence).

Ten specimens: Don Diego.

This record is of considerable interest, marking as it does an extension of the heretofore known range of this species, which up to the time von Berlepsch's specimen from Bucaramanga was recorded (*Ibis*, 1886, 57) was supposed to be confined to Panama. The present series agree in every respect with skins from that country.

This little flycatcher was found to be fairly common at Don Diego, where ten specimens were taken, but was not seen at any other locality. It was encountered among the shade-trees of the cacao-plantations and in open situations along the little streams, seldom in the forest itself.

347. *Euscarthmus granadensis* (Hartlaub).

Euscarthmus granadensis BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 96 (La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 150 (El Libano).

Twenty specimens: El Libano, Las Taguas, San Lorenzo, Sierra Nevada de Santa Marta (6,000 feet), San Miguel, and Heights of Chirua.

Some of these show more or less greenish yellow suffusion invading the white of the throat, while in all the lores are more or less buffy instead of white.

A species of the Subtropical Zone, ranging from 5,000 to 8,000 feet on the San Lorenzo, where, however, it was not common. In the Sierra Nevada it was found at practically the same elevation. It is a solitary little bird, and very quiet, with only a harsh call-note, which is very difficult to locate. As a rule it keeps about midway up in the trees, moving about very little, and then only in short hops.

348. *Euscarthmus impiger impiger* Sclater and Salvin.

Euscarthmus impiger BANGS, Proc. Biol. Soc. Washington, XII, 1898, 136 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 150 (Bonda and Cacagualito); XXI, 1905, 286 (Bonda; descr. nest and eggs).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIII, 1914, 176, in text (Bonda; crit.).

Twenty-nine specimens: Bonda, La Tigrera, Mamatoco, Santa Marta, Rio Hacha, and Fonseca.

Euscarthmus impiger was described originally from a specimen collected by Goering, and said to have been taken near Caracas, Venezuela. It has been traced eastward to Margarita Island (Cory, *Field Museum Ornithological Series*, I, 1909, 246), and westward to include the Santa Marta coast region, from which the great majority of the specimens at present known to science have been obtained. Its range is thus strictly littoral, and it is entirely probable that specimens from higher altitudes will be found upon examination to belong to *E. septentrionalis* Chapman. The present series agree well with a specimen in the American Museum collection from Puerto Cabello, Venezuela. There is considerable variation evident in the color of the upper parts, due at least in part to season, September and October birds being decidedly more rufescent than those shot in April and May. A considerable sexual difference in size is also indicated. The iris is variably marked as white, straw-color, and brown in different specimens.

A Tropical Zone form, ranging from near sea-level up to not more than 1,000 feet, but commoner on the coastal plain and at the lower edge of the foothills. Although numerous at Rio Hacha, it was not seen at Don Diego or Dibulla, being partial to the drier sections, and places where there are open savannas with scattering trees and shrubbery. It keeps near the ground in small trees and shrubs, and has a call-note loud and harsh for such a small bird.

Mr. Smith sent in eight nests of this species, all collected at Bonda from May 5 to June 2. "The nests are suspended from a drooping twig, of a shrub or herbaceous plant, to which they are strongly attached by the twig being heavily enclosed in the substance of the upper part of the nest, which sometimes forms a pointed projection upward beyond the main body of the nest. The small circular entrance, however, is on the side, near the top of the nest, instead of at the bottom through a slightly produced tube, as in *Elanena*, *Todirostrum*, *Rhyn-*

chocyclus, etc. Externally, the nest is formed of blades of dead grass and finer vegetable shreds and fibers, lined with a large quantity of soft plant down, varying in color from soiled white to deep rusty buff. In some instances the nest consists principally of plant down, mixed, especially externally, with enough fibrous material to give firmness.

"The vertical length of the nest proper is about 4 to 4½ inches, with sometimes in addition a pointed projection upward, forming the attachment, one to two inches in length. In other cases support is obtained by simply weaving into the outer wall on one side the slender plant stems or twigs to which it is fastened.

"The eggs [one to three in number] are clear dull white, nearly unspotted, or with only a few widely scattered rusty specks near the greater end. They measure about 18×13 ."

349. *Onychorhynchus mexicanus fraterculus* Bangs.

Muscivora mexicana (not of Sclater, 1857) SALVIN and GODMAN, Ibis, 1879, 202 (Manaure; crit.).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 193 (Manaure and Sierra Nevada de Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta").—BANGS, Auk, XVI, 1899, 137, in text (Sierra Nevada de Santa Marta; range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 145 (Bonda, Minca, and Cacagualito).

Onychorhynchus mexicanus fraterculus BANGS, Proc. New England Zool. Club, III, 1902, 86 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—VON BERLEPSCH, Ornith., XIV, 1907, 482 (ref. orig. descr.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 356 (Santa Marta localities and references).

Onychorhynchus fraterculus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 295 (ref. orig. descr.; range).

Twenty-five specimens: Bonda, Cacagualito, Mamatoco, La Tigrera, Minca, and Don Diego.

This southern race of *O. mexicanus* differs in averaging slightly smaller and in being a little paler below, but the differences are not so constant or well marked as the describer would have us believe, judging from the present series. The propriety of referring Costa Rican birds to this form may well be questioned. There is one male specimen (No. 38,771, Mamatoco, April 22) in which the crest is nearer orange than scarlet.

A Tropical Zone species, ranging from sea-level up to 3,000 feet,

and most common in the foothills between 500 and 1,500 feet. Being a forest bird, however, it avoids the coastal plain in the semi-arid section, favoring more the north part, where the forest reaches the beach. It is rarely seen far away from the banks of a small stream, and the nest may even be suspended over the water. It is a long pendant affair resembling that of *Ostinops decumanus melanterus*, except that the entrance is a hole in one side well down towards the bottom, instead of at the top as in *Ostinops*.

350. ***Machetornis rixosa flavigularis* Todd.**

Machetornis rixosa (not *Tyrannus rixosus* Vieillot) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 151 (Cacagualito).

Machetornis rixosa flavigularis TODD, Ann. Carnegie Mus., VIII, 1912, 210 (Santa Marta region; crit.).

Fifteen specimens: Bonda, Mamatoco, Don Diego, Fundación, Trojas de Cataca, Dibulla, Punto Caiman, and Rio Hacha.

These are similar to a series from northern Venezuela, whence came the type of this very distinct form, which evidently occupies all of the northern part of South America.

A widely distributed bird throughout the coastal plain section of the Tropical Zone, and recorded also at Fonseca and Valencia, but nowhere abundant. It invariably occurs in pairs, and usually only one pair to any given locality. It prefers pastures, the edges of lagoons, or even the sea-beach, and is almost entirely terrestrial in its habits. Individuals of this species have been noted taking ticks from cattle.

351. ***Arundinicola leucocephala* (Linnaeus).**

Eight specimens: Fundación, Punto Caiman, and Trojas de Cataca.

These agree with Venezuelan specimens. They are in more or less worn breeding dress (August and September).

This flycatcher was detected only along the coast of the Cienaga Grande and in the adjacent lowlands. Invariably it was seen along the edge of the water, either salt or fresh, preferring places where shrubs or trees extended out beyond the edge.

352. ***Fluvicola pica* (Boddaert).**

Fluvicola pica ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 151 (Cienaga).

Additional records: Punto Caiman (Carriker).

Nineteen specimens: Cienaga, Fundación, Dibulla, and Trojas de Cataca.

Not distinguishable in any way from examples from Venezuela and Trinidad. There is some variation affecting the relative proportions of black and white on the upper parts, as in specimens from these other regions. The present series includes several young birds, shot in August.

With practically the same range and habitat as *Arundinicola leucocephala* (except that it was found at Rio Hacha and Dibulla on the north coast), this species is more abundant, haunting the margins of sluggish streams, lagoons, and marshes, and is very tame.* It was breeding in the marsh at Fundación in August. The nest is a tiny, thin-walled, cup-shaped structure, made of fine grasses and the fibers of wild plantain, interwoven with thorny twigs and lined with vegetable down, and placed in the fork of a small thorny shrub, two feet over the water. Three white eggs are laid.

353. *Mecocerculus leucophrys setophagoides* (Bonaparte).

Mecocerculus leucophrys (not *Muscicapa leucophrys* D'Orbigny and Lafresnaye) SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 27 (Sierra Nevada de Santa Marta).—VON BERLEPSCH, Ornith., XIV, 1907, 489 ("Santa Marta"; crit.; syn.).

Myiopatis montensis BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 97 (Paramo de Macotama [type-locality], Macotama, and Paramo de Chiruqua; orig. descr.; type now in coll. Mus. Comp. Zool.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 149 (Bangs' reference).—SHARPE, Hand-List Birds, III, 1901, 119 (ref. orig. descr.; range).

Phaenomyias montensis DUBOIS, Syn. Avium, II, 1903, 1076 ("Santa Marta," in range; ref. orig. descr.).

Mecocerculus leucophrys setophagoides HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 73 ("Santa Marta," in range).

Mecocerculus leucophrys nigriceps BANGS and PENARD, Proc. Biol. Soc. Washington, XXXIV, 1921, 90 (Santa Marta region).

Twenty-seven specimens: San Lorenzo, San Miguel, Paramo de Mamarongo, and Cerro de Caracas.

These average paler yellow below than a series from the interior of Colombia, but the difference is certainly only seasonal. In fresh plumage the wing-bands are more buffy.³⁵

³⁵ Since the above was written Messrs. Hartert and Goodson (*Novitates Zoologicae*, XXIV, 1917, 494) have undertaken to show that the birds of the mountains of Venezuela are subspecifically separable from topotypical *setophagoides*, described from "Bogota." As such a conclusion would naturally leave the status of the Santa Marta birds open to question, we have again gone

Simons secured two specimens of this species in the Sierra Nevada, as recorded by Sclater in the *Catalogue of the Birds in the British Museum*. Mr. Brown took a series of eighteen specimens in the same region, which were duly described by Mr. Bangs as a new species of *Myiopatis*, its true position escaping notice up to 1912, when it was indicated by Messrs. Hellmayr and von Seilern.

On the San Lorenzo this flycatcher was seen only above 6,000 feet, and was rare below 7,000 feet, and not common even above that point. It is partial to open situations, the edges of the forest, and ridges dotted with shrubbery. In the Sierra Nevada a few were seen as low as 5,000 feet at San Miguel, but on the Cerro de Caracas and up the Macotama Valley between 9,000 and 11,000 feet the bird was abundant, frequenting the scattered shrubbery and the edge of the forest. Mr. Brown took it on the Paramo de Chiruqua at 12,000 feet, and it is essentially a species of the Temperate Zone, extending down into the Subtropical at certain places where local conditions favor.

354. *Octhœca diadema jesupi* Allen.

Octhœca jesupi ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 151 (San Lorenzo [type-locality], Valparaiso, and El Libano; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—SHARPE, Hand-List Birds, III, 1901, 93 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1075 (Santa Marta [region], in range; ref. orig. descr.).—VON BERLEPSCH, Ornith., XIV, 1907, 470 (crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 263 (ref. orig. descr.; range).

Octhœca diadema jesupi HELLMAYR, Nov. Zoöl., XX, 1913, 242 (San Lorenzo; crit.).

Octhœca gratiosa jesupi CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 430, in text (crit.).

Nine specimens: San Lorenzo, Sierra Nevada de Santa Marta over our series with care. Six males from Venezuela average as follows: wing, 68; tail, 66. Ten males from the Santa Marta region average: wing, 68; tail, 70. They differ, therefore, from Venezuelan birds in having the tail slightly longer than the wing, instead of the reverse. A series of nine males from the Eastern Andes measure: wing, 72; tail, 72. This latter series were mostly taken in September and October; they are appreciably yellower below and darker above than the Santa Marta birds, which were collected in March, April, and July, but the few specimens which are comparable in season are practically indistinguishable, and the same is true of the Venezuelan series in relation to the others. Under these circumstances we feel that a good case for recognizing more than one form has not yet been made out.

(8,000 feet), Cerro de Caracas, Macotama, and Paramo de Mamarongo.

In describing his new species Dr. Allen compared it with *O. gratiosa* (Sclater) from Ecuador, but its nearest relative would seem to be rather *O. diadema* (Hartlaub) of Colombia and Venezuela. After careful comparison with a good series of the latter it is obvious that *jesupi* is not more than subspecifically distinct. The two birds are of about the same color below (*diadema* averaging slightly brighter yellow), but differ above, the pileum being plain olive green in *jesupi*, while in *diadema* it is much darker, more dusky olive green. The back in the latter is rather darker also. There is no difference in size of moment. Precisely the same conclusion has independently been reached by Mr. Hellmayr from an examination of the type, which appears to be an immature bird. The brown wash on the flanks, to which he refers, appears on one of our specimens, and is evidently indicative of youth.

Dr. Chapman has lately proposed to call this form *O. gratiosa jesupi*, but as he does not mention *diadema* at all it is possible that some of his specimens may belong to the latter form.

The type of this species was taken by Mr. Smith's collector on the San Lorenzo at 7,000 feet, and others were secured at El Libano (6,000 feet) and at Valparaiso (Cincinnati), as low down as 5,500 feet. It seems to be a rare bird everywhere, and to be confined to the Subtropical and Temperate Zones. On the San Lorenzo it is most numerous at 7,000 feet, flitting about among the shrubbery and lower branches more like a warbler than a flycatcher. Two were shot in the shrubbery on the edge of the forest at 10,000 feet on the Cerro de Caracas, and three under the same conditions on the lower edge of the Paramo de Mamarongo.

355. *Octhœca polioastris* Salvin and Godman.

Octhœca polioastris SALVIN and GODMAN, Ibis. 1880, 123 (Sierra Nevada de Santa Marta, 9,200–10,000 ft.; orig. descr.; type now in coll. Brit. Mus.; crit.).—REICHENOW and SCHALOW, Journ. f. Orn., XXVIII, 1880, 318 (reprint orig. descr.).—SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 24 (Sierra Nevada de Santa Marta; descr.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 174 (Macotama); XIII, 1899, 96 (Sierra Nevada de Santa Marta, 9,000–12,000 ft.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 151 (Salvin and Godman's and Bangs' references; local range).—SHARPE, Hand-List Birds, III, 1901, 92 (Sierra Nevada de Santa Marta, in range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 262 (ref. orig. descr.; range).

Octhaeca lessoni polioogastra DUBOIS, Syn. Avium, I, 1900, 226 (Sierra Nevada de Santa Marta, in range; ref. orig. descr.).—VON BERLEPSCH, Ornith., XIV, 1907, 470 (crit.).

Additional records: Paramo de Macotama (Brown).

Twenty-seven specimens: Cerro de Caracas, Macotama, Paramo de Mamarongo, and Paramo de Chiruqua.

This species is quite distinct from its nearest ally, *O. lessoni* of the main Andes of Colombia. Besides being larger, the pileum is mummy brown (instead of dusky neutral gray), the abdomen light neutral gray, not white, and the ochraceous tawny breast-band is much broader and a little deeper in color. The superciliaries, too, are not white, as stated in the original description, but gray in front, and indistinct, becoming wider and whiter posteriorly, and strongly tinged with buffy, which color tends to coalesce across the nape.

This interesting alticoline species is one of those discovered by Simons in this region in 1879, four specimens having been secured in July of that year in the Sierra Nevada, at altitudes ranging from 9,200 to 10,000 feet. These, with another taken later, were the only ones known to science until Mr. Brown's researches yielded a series of fifteen specimens, duly recorded by Mr. Bangs. Its range is practically restricted to the Temperate Zone, between about 8,000 and 11,000 feet. Mr. Brown, indeed, records it up to 12,000 feet, but while this may be true of stragglers it is certainly not the usual thing. It proves to be a common bird along the edge of the forest and in the scattered shrubbery of the valleys at these elevations, occurring in pairs. A nest was found on the Paramo de Chiruqua at about 11,000 feet, with young nearly ready to fly. It was built of moss, lined with soft vegetable down, and placed on a projection on the side of a huge boulder, sheltered by some stunted trees.

356. *Octhodiæta pernix* Bangs. (Plate V.)

Octhodiæta pernix BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 95 (Macotama; orig. descr.; type now in Mus. Comp. Zool.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 152 (San Lorenzo).—SHARPE, Hand-List Birds, III, 1901, 91 (ref. orig. descr.; range).—DUBOIS, Syn. Avium, II, 1903, 1074 (Santa Marta [region], in range; ref. orig. descr.).—VON BERLEPSCH, Ornith., XIV, 1907, 469 (crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 260 (ref. orig. descr.; range).

Five specimens: San Lorenzo and Cerro de Caracas.

An alticoline species, restricted to the Temperate Zone of this re-

gion. It was described from a single specimen obtained by Mr. Brown in the neighborhood of Macotama, at an altitude of 9,000 feet. Mr. Smith's collector took a second example on the San Lorenzo, as duly recorded by Dr. Allen. The third known specimen was secured by the writer on the very crest of this same mountain, at 8,300 feet altitude, in some shrubbery on the sharp ridge. No others were ever seen there, but two pairs were taken along the edge of the forest on the Cerro de Caracas. All four of these were shot on the same day (March 30, 1914), and the species was not encountered elsewhere, so that it is evidently very rare.

357. *Orodynastes striaticollis striaticollis* (Sclater).

Myiotheretes striaticollis BANGS, Proc. Biol. Soc. Washington, XII, 1898, 174 (Macotama).—BANGS, Proc. New England Zool. Club, I, 1899, 78 (El Mamón).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 152 (Bangs' references).

Orodynastes striaticollis columbianus TODD, Proc. Biol. Soc. Washington, XXVI, 1913, 171 (San Lorenzo; orig. descr.; type in coll. Carnegie Mus.).

Thirteen specimens: San Lorenzo, Cerro de Caracas, San Miguel, and Paramo de Mamarongo.

Several of these have the two outer primaries abruptly emarginate near their tips, and with but one exception this condition is correlated with the shape of the dark area on the tail, which is cut squarely off. This is not a sexual character, as suggested by Sclater, but probably depends upon the age of the bird.

The first specimens of this species received from the junior author were described as a new race, on the ground of a slight difference in color, which since the receipt of more ample material proves to be entirely of a seasonal nature. July specimens are as a rule paler and duller than those secured in March and April, but Ecuador specimens run through the same range of variation. In the light of these facts it is evident that the distinction sought to be established cannot be maintained.

On the San Lorenzo, where this species was first met with by the writer, it was found only above 7,000 feet, in the deforested portion and along the crest of the ridge, which supports only stunted trees and shrubbery. In the Sierra Nevada, however, it was traced down to about 5,000 feet, although rare below 8,000 or 9,000 feet. Its center of abundance lies between 8,000 and 11,000 feet, while the highest



Ochthodiaeta pernix Bangs
(Three-fourths natural size)

point at which it has been taken is the Paramo de Mamarongo, at about 12,000 feet. Dr. Chapman says of this species that it "inhabits the Paramo Zone of all three ranges" of Colombia, but it certainly comes lower down in the Sierra Nevada de Santa Marta. It is a very shy bird, keeping in the open or along the edges of the forest, and is very difficult to approach within gunshot range. It has a loud, but rather musical call-note.

Family MIMIDÆ. MOCKING THRUSHES.

358. *Mimus gilvus columbianus* Cabanis.

Mimus melanopterus (not of Lawrence) WYATT, Ibis, 1871, 115, 320 (Santa Marta; habits).

Mimus gilvus (not *Turdus gilvus* Vieillot) SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1879, 36 (Santa Marta, in range).—SALVIN and GODMAN, Ibis, 1880, 116 (Santa Marta; crit.).—SHARPE, Cat. Birds Brit. Mus., VI, 1881, 350 (Santa Marta; crit.).

Mimus gilvus columbianus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 180 (Bonda and Cienaga).—RIDGWAY, Smithsonian Misc. Coll., Quarterly Issue, XLVII, 1904, 113, footnote (Santa Marta region; meas.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 236, part (Santa Marta localities and references).

Eighteen specimens: Bonda, Santa Marta, and Rio Hacha.

Mimus gilvus is a species which has received considerable attention at the hands of students of geographic variation. Without attempting here to go into the question of the number of races it is profitable to recognize, it may be stated that the Santa Marta bird is to be distinguished by its relatively small size and purer white under parts—characters which may be held to be of subspecific value on comparison.

Wyatt remarks that "this was the first bird we saw in the Mimosa thicket at the back of Santa Marta. It generally chooses one of the highest boughs for a perch, and there displays its powers of song and mimicry." Simons met with it in the same locality, and speaks of it as being "a favourite songster here, its notes being more harmonious than those of the Trupial." According to the writer's experience it is fairly common in the semi-arid coast belt from Cienaga around to the Rio Piedras, rare along the beach from the Rio Piedras to Dibulla, but becoming common again in the arid region of the Goajira Peninsula, whence it extends into the valley country southeast of the Sierra Nevada, as far at least as Valencia. It sticks close to the flat

country, not even going into the hills to the west. It is partial to tracts of dry, thorny scrub, giant cactus, and open plains, dotted with scattering low trees.

359. *Mimus gilvus melanopterus* Lawrence.

Mimus gilvus columbianus (not of Cabanis) BANGS, Proc. New England Zoöl. Club, I, 1899, 80 (San Sebastian and El Mamon).

Mr. Brown secured a series of fifteen specimens of a mockingbird from San Sebastian (6,600 feet) and El Mamon (8,000 feet). This series has been placed at our disposal by Mr. Bangs, but unfortunately they are all in more or less worn plumage (July and August), and some are in juvenal dress, so that they are unsatisfactory for comparison, but even at that it is clear that they cannot safely be referred to *columbianus*, which is strictly a form of the low country. In fact they agree much better with a series from Venezuela, for which we accept the name *melanopterus* Lawrence, the type of which has been examined in this connection. This form differs from *columbianus* in its rather larger size, grayer under surface, and less extensively white rectrices. In all probability *M. g. tolimensis* Ridgway (*Smithsonian Miscellaneous Collections*, Quarterly Issue, XLVII, 1904, 113) is the same, judging from the material examined.

360. *Donacobius atricapillus brachypterus* von Madarasz.

Donacobius atricapillus (not *Turdus atricapillus* Linnæus) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 180 (Cienaga).

Donacobius brachypterus VON MADARASZ, Orn. Monatsber., XXI, 1913, 22 (Aracataca; orig. descr.; type in coll. Budapest Mus.; crit.).

Donacobius atricapillus albovittatus (not of Lafresnaye and D'Orbigny) CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 531 (Cienaga; crit.).

Thirty-four specimens: Fundación, Trojas de Cataca, and Tucurínca.

The present series are virtual topotypes of the form recently described by Dr. von Madarasz under the name *brachypterus*, the locality Aracataca (misspelled by him "Aracatuca") lying between Fundación and Tucurínca. Dr. Chapman admits the validity of the form, but adopts for it the earlier name *D. albovittatus* Lafresnaye and D'Orbigny, on the ground that the type of the latter, as claimed by Mr. Hellmayr (*Novitates Zoologicae*, XXI, 1914, 158), is a young example of *D. atricapillus*. But we are in a position to show (and will do so

in another connection) that *D. albovittatus*, described from Bolivia, is a form entirely distinct from *D. atricapillus*, which will permit the use of the name *brachypterus* for the northern and western form, the characters of which have been fully indicated by Dr. Chapman. Compared with a Brazilian specimen in fine fresh plumage (No. 39,423, Collection American Museum of Natural History), the present bird is less buffy below; the upper parts are not so dark, and there is no buffy wash on the rump. In juvenal dress, represented by several skins taken between September 20 and October 15, the pileum is brown, somewhat darker than the back, and there is a broad buffy white superciliary stripe. None of the adult birds show any trace of this stripe.

This interesting bird was found only in the fresh-water marshes and in the rank growth of grasses and aquatic plants in the alluvial plain surrounding the Cienaga Grande. It was abundant along the inundated shores of the Aracataca River near its mouth, as well as in the marshes near Fundación. It is not at all shy, and when disturbed in its retreats will emerge from the thick growth of water plants to perch in a conspicuous position and scold at the intruder. It is always seen in pairs or families. No nests were ever located.

Family TURDIDÆ. THRUSHES.

361. *Platycichla flavipes venezuelensis* (Sharpe).

Platycichla flavipes carbonaria BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 108 (Chirua, La Concepción, and San Miguel).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 181 (Bangs' reference).

Seven specimens: Las Vegas, Pueblo Viejo, and Chirua.

Even in this small series there is considerable variation affecting the amount of black on the under parts in the male. In two specimens this color covers all of the under surface except the flanks and upper tail-coverts, these examples thus agreeing well with the description of *Platycichla venezuelensis atra* Cory (*Field Museum Ornithological Series*, I, 1909, 251). Others can be matched very closely by skins from Trinidad, Venezuela, etc. It seems very unlikely, judging from the available series studied in this connection, that there is more than one form in northern South America—a conclusion already reached by Mr. Hellmayr (*Journal für Ornithologie*, L, 1902, 66).

This bird is apparently found only on the north slopes of the Sierra

Nevada, and on the east slopes of the San Lorenzo, where the humidity is greater than elsewhere. Mr. Brown took no less than seven specimens in the former region. It was rare at Las Vegas, where it was seen only in a single deep, heavily wooded valley at about 4,000 feet. It seemed to be more numerous, although far from common, in the vicinity of Pueblo Viejo and Chirua, where virgin forest still exists. It keeps to the tree-tops, and is moreover very shy. Its song is heard but rarely, but once heard can never be forgotten, being distinctly thrush-like in its quality, and loud, liquid, and clear, combining the style of certain of the species of *Turdus* with that of *Hedymeles ludovicianus*.

362. *Turdus albiventer ephippialis* Sclater.

Merula incompta (?) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 182, in text (Palomina; crit.).

Merula albiventris fusa BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 107 (Chirua [type-locality], La Concepción, San Miguel, and San Francisco; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 182 (Bonda); XXI, 1905, 294 (Bonda; descr. nest and eggs).—VON BERLEPSCH, Nov. Zoöl., XV, 1908, 105, in text ("Santa Marta"; crit.).

Turdus albiventer (not of Spix) HELLMAYR, Journ. f. Orn., L, 1902, 61 ("Santa Marta"; syn.; crit.).

Turdus fusus SEEBOHM and SHARPE, Mon. Turdidæ, II, 1902, 237 (reprint orig. descr.; crit.).

Turdus albiventer var. *fusca* [sic] DUBOIS, Syn. Avium, II, 1903, 1093 (ref. orig. descr.; range).

Planesticus albiventer ephippialis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 536 ("Santa Marta"; crit.).

Six specimens: Bonda, Mamatoco, Pueblo Viejo, and Loma Larga.

On the use of *Turdus* in this connection compare Oberholser, *Proceedings Biological Society of Washington*, XXXIV, 1921, 105.

These agree well with a series from northern Venezuela, the Orinoco region, and French Guiana, which collectively differ from a skin from Bahia and another from Paraguay in being somewhat grayer, less brownish, the head in particular being decidedly gray, different from the back, while in the southern birds these parts are not so strongly contrasted, the gray being duller and more brownish. Wear and fading, however, cause considerable change in color in this species, which must not be overlooked when making comparisons. Some of

these northern birds are very strongly washed with brownish below, so that it is very doubtful if this character can be relied on to separate them from true *albiventer* of Brazil. The name applied to this northern form by Mr. Bangs, using an example from this region as the type, is long antedated by the *Turdus ephippialis* of Sclater, described in 1862, but it is not yet entirely certain that this can be maintained as a valid form, owing to the lack of a sufficient series from the type-locality of *albiventer* (fixed as Pará by Mr. Hellmayr) for comparison.

Mr. Smith's collectors took nine specimens of this thrush at Bonda, and Mr. Brown secured a series of fifteen examples from various localities in the Sierra Nevada de Santa Marta, but the writer has found it to be very rare, having taken but one each at Mamatoco, Pueblo Viejo, and Loma Larga. He expected to find it common at Don Diego or Dibulla, but none were seen there, nor yet around Cincinnati or Minca. As nearly as could be judged from the few individuals met with, its habits and haunts are the same as those of *T. grayi incomptus*, frequenting as it does open woodland and the vicinity of streams. Dr. Allen has described the nests and eggs sent in by Mr. Smith as very similar to those of this latter species.

363. *Turdus grayi incomptus* (Bangs).

Planesticus luridus (not *Turdus luridus* Hermann) BONAPARTE, Compt. Rend., XXXVIII, 1854, 4, footnote ("New Granada"; orig. descr.; type in coll. British Mus.).—SCLATER, Proc. Zool. Soc. London, 1859, 330 (crit.).—BAIRD, Rev. Am. Birds, 1864, 27, in text (crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 344 (ref. orig. descr.; range).

Turdus luridus SCLATER, Proc. Zool. Soc. London, 1867, 132, in text ("Santa Marta"; crit.).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 2 (range).—GIEBEL, Thes. Orn., III, 1877, 714 (syn.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1879, 19, in text (Santa Marta; crit.).

Turdus grayi (not of Bonaparte) SALVIN and GODMAN, Ibis, 1880, 115 (Santa Marta; crit.).—SEEBOHM and SHARPE, Mon. Turdidæ, I, 1902, 261 (Santa Marta; crit.).

Merula incompta BANGS, Proc. Biol. Soc. Washington, XII, 1898, 144 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 181 (Bangs' reference).—DUBOIS, Syn. Avium, I, 1901, 395 (Santa Marta, in range; ref. orig. descr.).

Merula grayi lurida ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 181 (Bonda; local range; crit.); XXI, 1905, 294 (Bonda; descr. nest and eggs).



Turdus grayi luridus HELLMAYR, Journ. f. Orn., L, 1902, 49, 50, 53 (Santa Marta; syn.; meas.; crit.).

Turdus grayi var. *lurida* [sic] DUBOIS, Syn. Avium, II, 1903, 1093 (ref. orig. descr.; range; syn.).

Merula lurida SHARPE, Hand-List Birds, IV, 1903, 122 (range; syn.).

Planesticus grayi luridus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 95 (diag.; range; references).

Twenty-eight specimens: Bonda, Cacagualito, Mamatoco, Tucurínca, Fundación, Santa Marta, and Fonseca.

This form, originally described by Bonaparte in 1854, was soon afterwards referred by Sclater to *P. grayi* of the same author, opinion wavering back and forth as to its validity for many years. The first specimens received from this region by Mr. Bangs were inadvertently described under a new name, *Merula incompta*, but Mr. Hellmayr soon corrected this mistake, and Dr. Allen had in the meantime indicated the application of Bonaparte's name *luridus* to the present bird. Unfortunately, however, as recently shown by Dr. Oberholser (*Proceedings Biological Society of Washington*, XXXIV, 1921, 106), this specific term is antedated when used with *Turdus*. It differs from *T. grayi casius* of Central America chiefly in slightly smaller size and paler coloration of the under parts. Several birds in juvenal dress, taken between August 17 and October 18, resemble the adults, but are rather more tawny buff below, with obscure spotting; above with narrow tawny shaft-streaks, and the tips of the wing-coverts with large triangular spots of the same color.

A Tropical Zone species, found only on the coastal plain and up to the lower foothills, scarcely going over 1,000 feet, and seemingly confined to the low country on the western and the southeastern sides of the Sierra Nevada, never having been observed on the coast between Santa Marta and Dibulla. Simons did not meet with it in the Rio Rancheria-Rio Cesar Valley, but it has recently been found here by the writer, at Fonseca and Valencia. Judging from this, its range would appear to be limited to the lower Magdalena basin, extending eastward as far as the Santa Marta region along the foothills of the Sierra Nevada. It was fairly common, according to the writer's experience, around Fundación, but could not be considered abundant in the vicinity of Santa Marta. It frequents groves of scattered trees, open woodland, and the edges of the forest. Its song resembles that of the Robin, but unlike that bird it is very seldom seen on the ground. Mr.

Smith sent in no fewer than eleven nests, with complements of eggs varying from one to four. Dr. Allen describes them as "solidly built of mud, plant roots, and stems, and are of the typical *Merula* character. The amount of mud used varies in different nests, as does the size of the structure.

". . . The eggs are pale blue, thickly spotted and blotched over the larger end with reddish chestnut, and sparingly over the rest of the egg. The eggs vary greatly in the tint of the ground-color, and also in the amount of spotting, and also in size."

364. *Turdus phæopygus phæopygus* Cabanis.

Merula phæopyga BANGS, Proc. Biol. Soc. Washington, XII, 1898, 160 (Pueblo Viejo; crit.).

Merula phæopyga minuscula BANGS, Proc. Biol. Soc. Washington, XII, 1898, 181 (Pueblo Viejo [type-locality] and Palomina; orig. descr.; type now in Mus. Comp. Zool.; meas.; crit.); XIII, 1899, 108 (La Concepción and Chirua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 182 (Bonda and Valparaiso; plum.).

Turdus phæopygus var. *minuscula* DUBOIS, Syn. Avium, I, 1901, 402 ("Santa Marta," in range; ref. orig. descr.).

Turdus phæopygus minusculus HELLMAYR, Journ. f. Orn., L, 1902, 63 ("Santa Marta"; crit.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 37, in text (crit.; ref. orig. descr.).

Turdus minusculus SEEBOHM and SHARPE, Mon. Turdidæ, II, 1902, 235 (descr., ex Bangs; crit.).

Merula minuscula SHARPE, Hand-List Birds, IV, 1903, 122 (ref. orig. descr.; range).

Planesticus minusculus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 344 (ref. orig. descr.; range).

Thirty specimens: Valparaiso, Cincinnati, La Tigrera, Las Vegas, Minca, Agua Dulce, Don Diego, and Pueblo Viejo.

Comparison of the present series with an equally good one from the Caura region and the north coast of Venezuela, which according to Mr. Hellmayr are true *phæopygus*, fails to confirm any of the color-characters assigned to "*minusculus*" either by that author or by the original describer, or yet to discover any others by which it may be distinguished. The variation in the color of the upper parts in both series exceeds the difference between them, and is apparently due mainly to season, examples taken from September to December being more brownish above than those shot in the spring and summer months. There is a slight average difference in size, but it is certainly

of no particular importance, considered by itself, so that there can remain no valid reason for maintaining the distinctness of the Santa Marta bird in a nomenclatural sense. Specimens from the interior of Colombia appear to be in nowise different.

The series includes six specimens in juvenal plumage, like the one described by Dr. Allen, and which were taken at dates ranging from June 4 to July 24.

A common bird within its range, which extends from about 1,000 to 5,000 feet, thus not going much beyond the Tropical Zone, and being most abundant between 2,000 and 4,000 feet. Occasionally it straggles down to sea-level, as at Fundación and Don Diego, where the semi-arid lowlands are replaced by forest (damp and heavy at the latter locality). It keeps in the cool depths of the forest, and is rarely seen near the ground. This bird has the curious habit (for a thrush) of building its nest in a shallow cavity under the overhanging bank along a roadside or stream, especially the former. It is composed of roots and green moss, and lined with fine black rootlets and weed-fibers. As a rule two eggs are laid, sometimes three; they are pale greenish blue, with markings of brown of various shades.

365. *Turdus olivater sanctæ-martæ* (Todd).

Merula olivatra (not of Lafresnaye) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 107 (La Concepción; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 181 (Valparaiso and Las Nubes; plum.).—SHARPE, Hand-List Birds, IV, 1903, 120 ("Santa Marta," in range).

Turdus olivater HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXXVIII, 1912, 36 (Sierra Nevada de Santa Marta; references; crit.).

Planesticus olivater sanctæ-martæ TODD, Proc. Biol. Soc. Washington, XXVI, 1913, 170 (Cincinnati; orig. descr.; type in coll. Carnegie Museum).

Thirty-two specimens: Valparaiso, Cincinnati, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, San Miguel, and Heights of Chirua.

Mr. Brown secured two specimens of this thrush, which were compared by Mr. Bangs with Lafresnaye's type of *Merula olivatra*, described from Caracas, Venezuela, of which species little appeared to be known at the time, there being so few specimens extant. Mr. Bangs remarked on the larger size of the Santa Marta birds, but considered that the slight color-differences were due to fading. However, with a good series from the type-locality available for comparison with

the Santa Marta series, it is evident that the latter represent a well-marked race, to which the subspecific name *sancta-martae* has recently been applied by the present writer. It differs from the typical form in the following particulars: the size averages a little larger; the upper parts are darker, more olivaceous, less brownish; the under surface is also darker, light brownish olive rather than isabella-color; and the black of the head and throat in the male is not so sharply defined posteriorly, gradually passing into the color of the back and breast. In this latter respect the form resembles *T. olivater roraimae* Salvin and Godman of British Guiana, but this is a much lighter-colored bird, as shown by the plate in Seeböhm and Sharpe's *Monograph of the Turdidae*, and by a direct comparison of specimens for which the writer's thanks are due to Mr. C. E. Hellmayr. In comparing specimens of thrushes care must of course be used to choose only those in good plumage, wear producing marked variations in color, and often in wing- and tail-measurements. Five adult males average: wing, 121; tail, 98.5; bill, 23; tarsus, 31. Five adult males of true *olivater* in comparable condition from the vicinity of Caracas, Venezuela, average: wing, 115; tail, 91; bill, 22; tarsus, 29.

In juvenal plumage, illustrated by two specimens from Las Vegas, May 28, and one from Cincinnati, June 16, the lower parts are rich buffy, spotted and barred with dusky, in irregular pattern, most thickly on the breast; the back has very narrow buffy shaft-streaks; and the wing-coverts are tipped with triangular spots of ochraceous. There is no trace of the black head at this stage. Two specimens from Cincinnati, July 4, are in postjuvenal moult. In what appears to be immature (first winter and first nuptial) dress the black throat of the male is less "solid," owing to the paler edgings of the feathers.

This is a species which in this region ranges from the upper edge of the Tropical into the Subtropical Zone, or from about 4,000 to 7,000 feet, wherever there is forest, being most numerous, however, between 4,000 and 5,000 feet. It is fairly abundant throughout its range, but is confined almost exclusively to the forest, although it seems to have adapted itself to the coffee-plantations and the shade-trees to some extent. During the heat of the day it is rarely observed, but is always in evidence, if present, in the early morning and especially just before dusk, at which time its vocal efforts are most frequently heard. The song much resembles the evening song of the

Robin, but is softer and sweeter in tone. It is shy and hard to approach, concealing itself in a tree-top when singing.

A nest with one egg sent in by Mr. Smith is labelled Valparaiso, May 29. The nest is composed almost wholly of moss, lined with fine wiry rootlets, and the egg bears a striking resemblance to that of the Olive-backed Thrush (*Hylocichla ustulata swainsoni*). A second nest with eggs was taken by the writer on his plantation "Vista Nieve," near Cincinnati, on May 5, 1916, by the roadside in the forest. It is of the usual thrush construction—a little mud in the bottom, and then a few leaves and vegetable fibers, the main body, however, being composed of green moss, lined with fine blackish rootlets and plant-fibers, mixed with moss. The eggs resemble those of *Turdus phæopygus*, but are larger and more heavily marked.

366. *Semimerula cacozela* (Bangs).

Turdus gigas (not of Fraser) SALVIN and GODMAN, Ibis, 1879, 198 (San Sebastian; crit.).

Merula gigas cacozela BANGS, Proc. Biol. Soc. Washington, XII, 1898, 181 (Macotama; orig. descr.; type now in coll. Mus. Comp. Zoöl.; meas.; crit.); XIII, 1899, 107 (San Miguel, Paramo de Chiruqua, and Paramo de Macotama).—BANGS, Proc. New England Zoöl. Club, I, 1899, 80 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 181 (Salvin and Godman's and Bangs' references).—DUBOIS, Syn. Avium, I, 1901, 398 (Santa Marta, in range; ref. orig. descr.).

Turdus cacozela VON BERLEPSCH, Orn. Monatsber., X, 1902, 71, in text (crit.).

Semimerula cacozela SHARPE, Hand-List Birds, IV, 1903, 130 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 347 (ref. orig. descr.; range).

Merula cacozela SEEBOHM and SHARPE, Mon. Turdidæ, II, 1902, 61 (Santa Marta references and localities; descr.; crit.).

Turdus fuscater cacozela HELLMAYR, Bull. Brit. Orn. Club, XVI, 1906, 92 (range).

Planesticus fuscater cacozelus HELLMAYR, Nov. Zoöl., XXVIII, 1921, 234 (San Miguel and Paramo de Chiruqua; crit.).

Twenty-three specimens: San Lorenzo, San Miguel, Cerro de Caracas, and Paramo de Chiruqua.

The first specimen of the Giant Thrush of the Santa Marta region was taken at San Sebastian, at an altitude of 6,700 feet in the Sierra Nevada, by Simons. Later on he secured two other specimens at 9,000 feet, as we are told by Sharpe. "Messrs. Salvin and Godman remarked on the paler colour of the Santa Marta specimens, but did not

consider them worthy of specific separation." Sharpe was on the point of describing it, however, in the winter of 1898, but was anticipated by the publication of Mr. Bangs' name, based on two specimens secured at Macotama by Mr. Brown. Later this collector secured a considerable series of specimens from sundry other localities in the Sierra Nevada. The fine series secured by the junior author amply confirm the characters ascribed to this form, which differs so strikingly, indeed, from the other members of the group as to justify its being raised to specific rank.

There is one bird (No. 37,952, San Lorenzo, July 22) in juvenal dress, the spots below being arranged in the forms of bars, on a buffy ground.

This handsome large thrush is found from the Subtropical through the Temperate Zone in the Sierra Nevada, or from 5,000 up to 12,000 feet, wherever conditions are suitable, as well as on the San Lorenzo from 7,000 feet upwards, in places where the mountain has been denuded of forest, and a semi-paramo condition exists. It is not found in the forest, but rather in open grassy places where scattered shrubs and stunted trees are growing, and in tracts of shrubbery and bushes interspersed with small open spots. In the early morning the birds come out in the open and become very active, also late in the evening, or when the mountain mists have blotted out the landscape, but they are almost never seen during the heat of the day. They hop about on the ground a great deal, hunting for worms, as does our Robin, and their song is very similar also.

367. *Hylocichla fuscescens fuscescens* (Stephens).

Hylocichla fuscescens ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 182 (Bonda).—ALLEN, Auk, XVII, 1900, 367 (Bonda).

Hylocichla fuscescens fuscescens RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 64 (Bonda, in range; references).

One specimen: Bonda.

In all probability the Wilson Thrush is a winter resident in this region, although so far the only records for its occurrence fall in the month of October, beginning with October 5. These all pertain to specimens taken at Bonda by Mr. Smith, and which appear referable to the typical eastern race.

368. *Hylocichla minima aliciae* (Baird).

Turdus aliciae BANGS, Proc. Biol. Soc. Washington, XII, 1898, 144 ("Santa Marta").

Hylocichla aliciae ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 183 (Bonda, Las Nubes, Onaca, and Valparaiso).—ALLEN, Auk, XVII, 1900, 367 (Bonda, Las Nubes, Onaca, and Valparaiso; "Santa Marta," *ex* Bangs).

Hylocichla aliciae aliciae RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 59 (Bonda, etc., in range; references).

Five specimens: Bonda, Mamatoco, and La Tigrera.

For the change of the specific name see Bangs and Penard, *Bulletin Museum of Comparative Zoölogy*, LXIII, 1919, 30.

The Santa Marta series of this species in the collection of the American Museum vary greatly in color, some being decidedly rufescent above, others more olivaceous. No. 97,609 (Bonda, January) was identified by Dr. Allen as *H. ustulata swainsoni*, doubtless on that account, but unquestionably belongs here instead.

A common winter visitant throughout the lowlands and foothills back of Santa Marta, preferring the more open woodland and shrubbery of the semi-arid belt of this region to any other locality, although seen rarely around Don Diego and Dibulla, on the north coast. It seldom goes above 2,000 feet, although it has been noted, rarely, as high as 4,000 feet. It is a shy and silent bird, arriving as early as October 7, and remaining as late as May 3 (1913).

369. *Hylocichla ustulata swainsoni* (Cabanis).

Turdus swainsoni SALVIN and GODMAN, Ibis, 1880, 115 (Minca; crit.).

Hylocichla ustulata swainsoni BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 107 (Chirua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 182, part (Bonda).—ALLEN, Auk, XVII, 1900, 367 (Bonda; Chirua, *ex* Bangs; Minca, *ex* Salvin and Godman).

Two specimens: Onaca and Valparaiso.

A winter resident, apparently not common, however. Simons secured a single specimen at Minca on January 22, 1879, and Mr. Brown got another at Chirua on February 16, 1899. At least one of the specimens recorded by Dr. Allen under the head of this species belongs to *H. minima aliciae* instead, as already remarked; the other example has not been seen. The specimens here recorded were both received from Mr. Smith; they bear dates of December 30, 1898, and March 24, 1899, respectively. The species occurs as far south at this season as Brazil and Argentina.

370. *Catharus melpomene aurantirostris* (Hartlaub).

Catharus aurantirostris BANGS, Proc. Biol. Soc. Washington, XII, 1898, 160 (Pueblo Viejo), 181 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 183 (Bangs' reference).

Catharus melpomene aurantirostris HELLMAYR, Journ. f. Orn., L, 1902, 46 ("Santa Marta").

Catharus melpomene sierræ HELLMAYR, Verh. Orn. Ges. Bayern, XIV, 1919, 126 (La Concepción; orig. descr.; type in coll. Munich Mus.; crit.).

Additional records: San Francisco (Brown).

Seventeen specimens: Cincinnati, Pueblo Viejo, and Chirua.

This series agree well with another (fifty specimens) from northern Venezuela, whence came the type of *auranti-rostris*. Compared with a series of *C. melpomene birchalli* from Trinidad, they are less rufescent, more olivaceous above and on the wings. There is, however, considerable variation in the color of the tail, which in some individuals is fully as rufescent as in *birchalli*. The dusky streaking on the throat is well pronounced in some skins, but scarcely evident in others. The form is sufficiently distinct, although only subspecifically separable, from *C. melpomene costaricensis* Hellmayr.

This species is a rare bird around the San Lorenzo, where it is found between 3,500 and 5,000 feet, frequenting dense second-growth in ravines and along the edges of the forest, but not in the midst of the forest itself. It is much more abundant on the north slopes of the Sierra Nevada, where it ranges between 2,000 and 5,000 feet, keeping practically within the confines of the upper Tropical Zone. The conditions in this latter region are very favorable to its existence, owing to the prevalence of thick second-growth in the old abandoned cultivations of the Indians. Strange as it may appear, it seems to prefer the vicinity of human habitations, being nowhere so abundant as in the thick brush growing up to the very edge of one side of the village of Pueblo Viejo. Like all of the genus, it is very shy and retiring in its habits, and is rarely seen or heard except in the early morning. The song is very pleasing, consisting of a variety of low sweet notes. The birds never sing in the open, but only when hidden in a thicket, and when approached at such times stop at once and slip noiselessly away. Several were heard at Las Vegas.

371. *Catharus fuscater sanctæ-martæ* Ridgway.

Catharus fuscater (not *Myiotur-dus fuscater* Lafresnaye) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 108 (Chirua; plum.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 183 (El Libano; plum.).

Catharus fuscater sancta-martae RIDGWAY, Smithsonian Misc. Coll., Quarterly Issue, XLVII, 1904, 112 (El Libano; orig. descr.; type in coll. Carnegie Mus.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 20 (diag.; range; references).

Catharus sancta-martae BRABOURNE and CHUBB, Birds S. Am., I, 1912, 348 (ref. orig. descr.; range).

Eight specimens: El Libano, Las Taguas, Sierra Nevada de Santa Marta (6,000 feet), San Lorenzo, Pueblo Viejo, and San Miguel.

Specimens of this *Catharus* received from the Santa Marta region were determined by both Mr. Bangs and Dr. Allen as *C. fuscater* (Lafresnaye), described from "Bogotá," Colombia. They differ conspicuously from typical *fuscater*, however, as shown by a comparison in series, in having the ventral surface much more uniform grayish, the white more restricted, and with practically no tinge of buffy. The form was described by Mr. Ridgway in 1904 from one of the above specimens, being compared with the Central American race, *C. fuscater hellmayri* von Berlepsch. The acquisition of additional material shows that the characters ascribed to it are not entirely constant, the throat being slightly paler than the breast in some cases, and the under tail-coverts varying somewhat also. There is less white below, however, than in *hellmayri*, and more black on the chin, so that the form is recognizable, although not well marked. As pointed out by Dr. Allen, males average darker and more richly colored than females.

This thrush was taken by Mr. Smith's collectors at El Libano, on the San Lorenzo, at an altitude of 6,000 feet, while Mr. Brown got one specimen at Chirua. By the writer it was met with on the forest-covered slopes of the San Lorenzo between 4,500 and 7,000 feet, being most frequent between 5,000 and 6,000 feet, but rare everywhere. It was occasionally heard, but rarely seen, in the Sierra Nevada, sometimes as low as 2,000 feet, as in the forest to the east of Pueblo Viejo, and as high up as 7,000 feet on the forested slope to the east of San Miguel. In its faunal distribution it is therefore essentially a species of the Subtropical Zone. It is at all times an extremely shy bird, never venturing out of the dark forest, where it keeps close to the ground, slipping away like a shadow when approached. Its song is not at all like the other members of the genus which the writer has heard, so that it was a long time before he was able to connect the song with its author. It resembles more the clear whistling notes of certain of the manakins, and is almost impossible to locate.

Family SYLVIIDÆ. WARBLERS.

372. *Polioptila plumbeiceps* Lawrence.

Polioptila nigriceps (not of Baird) SALVIN and GODMAN, Ibis, 1880, 116 (Valencia; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 181 (Salvin and Godman's reference).

Polioptila sclateri SHARPE, Cat. Birds Brit. Mus., X, 1885, 449 (Valencia).—SHARPE, Hand-List Birds, III, 1901, 241 ("Sierra [Nevada] of Santa Marta").

Polioptila nigriceps sclateri HELLMAYR, Nov. Zoöl., VII, 1900, 537, in text, 538 ("Santa Marta"; crit.).

Twenty-five specimens: Rio Hacha and Valencia.

These differ from a good series of Venezuelan specimens in averaging whiter below, in which respect they approach *P. livida* (Gmelin) of Cayenne. The latter, however, has the tertiaries and rectrices much more extensively white, and the greater wing-coverts margined with white, while the primaries are wholly black, and not edged with gray, as in the present form, which had best be kept specifically distinct.

A fairly common bird around Rio Hacha, as well as in the valley southeast of the mountains, frequenting all sorts of growth. It is very restless in its habits, hopping continuously about in the branches in its search for insects, and is not at all shy. The note is a faint, insect-like chirp.

373. *Polioptila bilineata bilineata* (Bonaparte).

Polioptila bilineata BANGS, Proc. Biol. Soc. Washington, XII, 1898, 144 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 181 (Bonda).—HELLMAYR, Verh. zoöl.-bot. Ges. Wien, 1903, 224 ("Santa Marta," in range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 726 (Bonda and "Santa Marta," in range; references).

Four specimens: Bonda and Fundación.

A rare bird in this region. Mr. Brown secured a single specimen, taken probably near Bonda, and Mr. Smith's collectors secured only two. Although the writer has watched closely for the species in this vicinity he has never succeeded in detecting it there. Three specimens were taken at Fundación, in August and October, 1915. They were shot in open woodland, and in habits resembled *P. plumbeiceps*.

Family CINCLIDÆ. DIPPERS.

374. *Cinclus rivularis* Bangs.

Cinclus rivularis BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 105 (Chirua [type-locality] and Paramo de Chiruqua; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 181 (Bangs' reference).—DUBOIS, Syn. Avium, I, 1901, 419 (ref. orig. descr.; range).—SHARPE, Hand-List Birds, IV, 1903, 102 (ref. orig. descr.; range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 677 (diag.; range; ref. orig. descr.).—STEJNEGER, Smithsonian Misc. Coll., Quarterly Issue, XLVII, 1905, 424 (diag.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 340 (ref. orig. descr.; range).

Four specimens: Macotama, San Miguel, and Taquina.

Although clearly an offshoot from *C. leuconotus* of the Andes of Venezuela, Colombia, and Ecuador, developed no doubt through isolation, this species is perfectly distinct, having much less white on both the upper and under parts. The color of the pileum is the same in both, but the back is almost uniform dusky slate-color, with concealed shaft-streaks of white at the bases of the feathers, instead of the large white blotch of *C. leuconotus*. The wings, tail, and lower parts from the throat down are uniform with the back, except that all but one of the specimens in the present series have more or less white mottling below, possibly indicative of immaturity. In this odd specimen the throat is much shaded with dusky slate-color; in the others it is pure white. Mr. Bangs has noted similar variation in his specimens, which were the only ones known to science up to the time the present series were secured.

Of the three specimens of the Santa Marta Dipper taken by Mr. Brown two were said to have come from Chirua, at 7,000 feet, and the third from the Paramo de Chiruqua, at 11,000 feet. However, the Chirua specimens either were not taken at that place, or else they came from a much lower altitude. The species properly belongs to the Temperate Zone, but is one of the few which is known to extend its range downward into the Subtropical, following its habitat. It was not noted by the writer above 9,000 feet, this record referring to the Macotama specimen, but on the other hand it was found in the river at Pueblo Viejo, as low as 2,000 feet. It is a rare bird and very hard to secure, because of its shyness and its habit of keeping among the rocks of the rapid mountain streams, being partial to the spray-drenched

boulders beneath falls and among tumbling rapids. When wounded the birds will dive and swim under water like a grebe, and unless killed outright are rarely secured.

Family TROGLODYTIDÆ. WRENS.

375. *Microcerculus squamulatus corrasus* Bangs.

Microcerculus marginatus (not *Heterocnemis marginatus* Selater) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 107 (Chirua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 180 (Onaca).

Microcerculus corrasus BANGS, Proc. New England Zool. Club, III, 1902, 87 (Chirua; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.).—SHARPE, Hand-List Birds, IV, 1903, 98 (ref. orig. descr.; range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 666 (diag.; range; references; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 340 (ref. orig. descr.; range).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 45, footnote (ref. orig. descr.; crit.).

Microcerculus squamulatus corassus [sic] CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIV, 1915, 647, 648, in text ("Santa Marta" and Don Diego; meas.; crit.).

Two specimens: Don Diego.

The various forms of *Microcerculus* are still involved in great confusion, due largely to paucity of material, the plumage-variations in the group being very imperfectly understood. Mr. Bangs (*Proceedings Biological Society of Washington*, XXII, 1909, 34) has adduced good reasons for suspecting that there may be but one form in Central America, and it is altogether likely, reasoning by analogy, that some changes will have to be made in the status of the currently recognized South American forms also. It seems clear, for instance, that the form inhabiting the Santa Marta region will require reduction to a subspecies of *M. squamulatus*, as has already been proposed by Dr. Chapman. It differs from typical *squamulatus* in its paler brown, less rufescent color of the upper parts and flanks, and by its more narrowly barred under surface, with the brown wash of the sides and flanks more restricted. Both our specimens appear to be fully adult; they are approached by immature examples of *squamulatus* in the color of the upper surface, but adults of the latter are sufficiently different.

This wren was described by Mr. Bangs from a single specimen collected by Mr. Brown at Chirua, March 13, 1899, and labelled as having

been taken at 7,000 feet, although this figure is undoubtedly a mistake. Mr. Smith sent in a single specimen from Onaca, shot January 7, 1899. The writer took a fine pair at Don Diego on January 31, 1914. These were the only ones seen or heard, and were found in a ravine in the heavy forest a short distance up in the hills above the coastal plain. The four specimens just enumerated are the only ones known. Like all the forms of this genus, it is very rare and very hard to find, on account of its shyness and retiring habits.

Since the above was written the species has been noted not uncommonly in the heavy forest of the dark ravines on the north and east slopes of the San Lorenzo, from 2,000 up to 4,000 feet. It has a very characteristic song of several clear liquid notes, which have such a pronounced ventriloquistic quality that the bird is very difficult to locate by its song. The bird invariably keeps on or very near the ground, while the song appears to come from up in the trees.

The most recent record is that of several individuals heard singing at Loma Larga, on the eastern flank of the Sierra Nevada, in July, 1920.

376. *Thryophilus albipectus venezuelanus* (Cabanis).

Thryophilus albipectus bogotensis (not of Hellmayr) OBERHOLSER, Proc. U. S. Nat. Mus., XXV, 1902, 66 (Don Diego; descr.; crit.).

Twenty-six specimens: Buritaca, Don Diego, Dibulla, Arroya de Arenas, and Fonseca.

The *Thryophilus albipectus* group has always given a great deal of trouble to ornithologists, several authors having struggled with the problem, with more or less success. We have to do here only with the Santa Marta bird, misidentified, as it now appears, with *T. albipectus bogotensis* Hellmayr by Dr. Oberholser some years ago, after examining a specimen from Don Diego (No. 9,365, Collection Carnegie Museum). Fortunately we have for comparison a good series from various points on the north coast of Venezuela, whence came the type of *Thryothorus venezuelanus* Cabanis. These are quite indistinguishable from the Santa Marta series, and with them are barely separable from typical Cayenne birds, differing only in being a shade more brightly rufescent above. The ashy gray sides of the neck, to which Mr. Hellmayr refers (*Novitates Zoologicae*, XIV, 1907, 3), are not a diagnostic character, being precisely the same as in the Cayenne examples. *T.*

albipectus venezuelanus is a very poor subspecies at best, scarcely worthy of recognition. While thus so close to *T. albipectus albipectus*, it is easily told from *T. albipectus bogotensis* of the Bogotá region of Colombia, the latter being by comparison far more deeply rufescent, both above and below.

In juvenal dress, represented by Nos. 9,372 (May 14) and 44,494 (January 20), the colors are much duller, the streaking on the sides of the head indistinct, and there are faint indications of dusky streaks on the throat.

This species is confined in the Santa Marta region to the Rio Rancheria-Rio Cesar Valley and to the coastal plain of the north shore, where the heavy humid Tropical Zone forest descends to sea-level. It frequents the tangled undergrowth along the shores of the lagoons, old clearings, and similar situations. Like all of the family it is noisy and active; climbing about from the ground to the tops of the vine-covered trees, but not coming out into the open. It has the usual wren song of clear liquid notes, rather weak in this case, and is more addicted to uttering its harsh rattling chirp than to singing.

A nest received from Mr. Smith is marked Don Diego, May 8. It is a bulky affair, loosely constructed of small twigs and tendrils, lined with very fine grass-tops. It is built at the end of a horizontal branch of a lime-tree, and surrounded almost completely by the leaves, so that it must have been pretty well concealed. The eggs are three in number, about 19×14 mm.; they are white, spotted with brownish and with lilac shell-markings, chiefly around the larger end.

377. *Thryophilus leucotis leucotis* (Lafresnaye).

(?) *Thryothorus albipectus* (not of Cabanis) SCLATER, Proc. Zoöl. Soc. London, 1860, 273 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1861, 20 ("Santa Marta").—SCLATER and SALVIN, Proc. Zoöl. Soc. London, 1864, 345 ("Santa Marta").

(?) *Thryothorus leucotis* SCLATER, Proc. Zoöl. Soc. London, 1870, 328, in text ("Santa Marta"; crit.).

(?) *Thryophilus albipectus galbraithii* (not *Thryothorus galbraithii* Lawrence) HELLMAYR, Nov. Zoöl., XV, 1908, 16, in text ("Santa Marta," in range).

Eleven specimens: Bonda, Fundación, and Tucurínca.

All of the above references pertain to a specimen from Verreaux which came into Sclater's hands, and which may possibly have been *T. albipectus venezuelanus* instead.

The proper application of Lafresnaye's name *Thryothorus leucotis* (*Revue Zoologique*, 1845, 338) was long a matter of conjecture. The type, while included with the others of that author in the collection of the Museum of Comparative Zoölogy, has not actually turned up until very recently, so Mr. Bangs informs us. Sclater (*Proceedings Zoölogical Society of London*, 1870, 328) identified the species in question with the *Thryothorus galbraithii* of Lawrence, described from Panama, and Dr. Oberholser (*Proceedings U. S. National Museum*, XXV, 1902, 67) indorsed this view, but apparently without having examined Colombian specimens. Mr. Hellmayr (*Verhandlungen der k. k. zoologische-botanischen Gesellschaft in Wien*, 1901, 768) was the first author to correctly apply the name and to present a full and diagnostic description. While carefully distinguishing *leucotis* from related forms, he at the same time makes *galbraithii* conspecific with *albipectus*, ignoring the close affinity existing between *leucotis* and *galbraithii*. The present series, which correspond very closely both with Lafresnaye's original description and with the later one by Mr. Hellmayr, have been compared with the type and a considerable series of *galbraithii*. The latter is much more rufescent below, but even the palest specimens are darker than the Colombian birds here recorded. The differences are only of subspecific value in the judgment of the writer, and the two forms should stand as *Thryophilus leucotis leucotis* and *T. leucotis galbraithii*. The type of *Thryophilus pallescens* Ridgway (*Bulletin U. S. National Museum*, No. 50, III, 1904, 624), which has been examined in the present connection, proves to be nothing more or less than an example of the former race. It may well be doubted if it occurs as far inland as Bogotá, as it seems to be relatively a lowland if not a littoral form.

This wren takes the place of the preceding species on the west side. It was taken and seen only at Fundación and Tucurínca, where it is found along the lower edges of the foothills rather than on the alluvial plain. It frequents tangled undergrowth and masses of vines, where it is fairly abundant, and much in evidence, being rather noisy as a rule, and having a pleasing song of several low liquid notes. Mr. Smith sent in a single juvenal example from Bonda (October 6). All but one of the specimens secured by the writer are more or less worn and faded.

378. *Thryophilus rufalbus minlosi* von Berlepsch.

Thryothorus rufalbus (not of Lafresnaye) SCLATER, Proc. Zool. Soc. London, 1855, 143 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1861, 20 ("Santa Marta").

Thryophilus rufalbus SALVIN and GODMAN, Ibis, 1880, 116 (Minca).—VON BERLEPSCH, Journ. f. Orn., XXXII, 1884, 281, in text ("Santa Marta," in range).

Thryophilus minlosi BANGS, Proc. Biol. Soc. Washington, XII, 1898, 144 ("Santa Marta").

Thryophilus rufalbus castanonotus (not of Ridgway) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 179 (Bonda, Cacagualito, and Minca; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 633 (Santa Marta localities and references).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 41, in text ("Santa Marta," *ex* Ridgway; crit.).

Twenty-seven specimens: Bonda, La Tigrera, Minca, Mamatoco, Don Diego, Fundación, Tucurínca, and Tierra Nueva.

Birds of this species vary considerably according to season. Thus, a series from Don Diego collected in January and February are appreciably darker above than May and June specimens from La Tigrera and Minca; in fact, they are scarcely to be distinguished from Costa Rican examples referable to *T. rufalbus castanonotus*, so far as this character is concerned. A large series from the north coast of Venezuela vary precisely in the same way. There would be some excuse for referring all the Colombian birds to *castanonotus*, as has been done by Mr. Ridgway, were it not for the fact that they may be separated by the much whiter under parts, the throat and breast lacking the gray wash so much in evidence in *castanonotus*, while the brown of the sides and flanks averages more restricted. Venezuelan skins are similar in all respects, and to them the name *cumanensis* has been very properly applied by Messrs. Chapman, Ridgway, and Hellmayr and von Seilern. It would seem, however, as if an earlier name, *Thryophilus minlosi* von Berlepsch (*Journal für Ornithologie*, XXXII, 1884, 249, pl. 1, fig. 3) ought to be considered in this connection. This is described (*cf.* page 280) and figured as similar to *T. rufalbus*, but differently colored above, rufescent earthy brown, instead of chestnut rufous, the abdomen not rufescent, the upper tail-coverts banded, and the bill longer. The describer was at considerable pains to point out its distinctive characters, notwithstanding which no ornithologist has been able to satisfactorily identify the form, and the type has been considered unique. Although naturally it has not been possible to

examine it in this connection, it is scarcely likely that it will prove to be anything more than a freak or off-colored example of the ordinary race of *rufalbus* inhabiting Colombia. The evidence on this point is made practically conclusive by reason of the circumstance that a series of specimens is now available from the same general region whence came von Berlepsch's type, and these are precisely like Santa Marta and Venezuelan skins. Under these circumstances we accept the name *minlosi* in place of *cumanensis*.

Three young birds with more or less squamate under parts are dated January 22, June 24, and August 8.

This is strictly a bird of the Tropical Zone, being found from the coast up to 2,500 feet, but more abundant between 500 and 1,500 feet, although wherever the forest extends lower, as at Don Diego and Fundación, it is common lower down. It was noted at Valencia, in the Rio Cesar Valley, but was rare. It is curious to note that while *T. albipectus venezuelanus* and *T. leucotis leucotis* are found almost exclusively in the flats running back from sea-level, this species is rarely found there, but instead occurs along the little valleys of the foothills, being especially partial to the small tangled flats or "vegas" in the bends of the creeks. It is not so shy as most wrens, is easily "squeaked up," and oftener comes out into the open. The song is loud and clear, and of very deep, pure, liquid notes, which have a bell-like quality or timbre. The nest is domed over, and the eggs are white, faintly speckled with reddish brown.

379. *Henicorhina hilaris bangsi* Ridgway.

Henicorhina leucophrys (not *Troglodytes leucophrys* Tschudi) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 160 (Pueblo Viejo), 181 (San Francisco, Palomina, and San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 83, 84 (Sierra Nevada de Santa Marta, up to 8,000 ft.; descr.; meas.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 180 (Valparaiso and El Libano).

Henicorhina hilaris (not of von Berlepsch and Taczanowski) HELLMAYR, Journ. f. Orn., LI, 1903, 531 (Sierra Nevada de Santa Marta; crit.).

Henicorhina hilaris bangsi RIDGWAY, Proc. Biol. Soc. Washington, XVI, 1903, 168 (San Francisco; orig. descr.; type in coll. U. S. Nat. Mus.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 610 (diag.; range; ref.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.), 293 (Valparaiso; descr. nest).

Henicorhina bangsi BRADBOURNE and CHUBB, Birds S. Am., I, 1912, 339 (ref. orig. descr.; range).

Additional records: San Miguel, Chirua, La Concepción (Brown).

Thirty-four specimens: El Libano, Valparaiso, Cincinnati, Las Taguas, Las Vegas, Minca, Pueblo Viejo, and Heights of Chirua.

Henicorhina is a most puzzling genus, and authorities differ as to the number of specific types to be recognized. The best arrangement would seem to be that proposed by Mr. Ridgway in 1904, in which the forms with pale grayish white under parts are segregated both from *H. leucosticta*, *H. prosthelauca*, and *H. inornata* on the one hand, and from *H. leucophrys* on the other, although in a linear sequence they should probably occupy an intermediate position between these two groups. With only a partial representation of the various forms available for examination at this time, it is difficult to suggest any improvement upon this arrangement in so far as the present form is concerned. The first specimens of a *Henicorhina* from the Santa Marta region received by Mr. Bangs were referred to *H. leucophrys*. But typical *H. leucophrys* of Peru has the breast deep gray and the pileum nearly black, characters which do not fit the Santa Marta bird, which Mr. Hellmayr accordingly referred to *H. hilaris*, described from western Ecuador. Fortunately there happened to be a cotype of this latter form in the collection of the U. S. National Museum, whereby Mr. Ridgway was enabled to distinguish the Santa Marta bird under the name *Henicorhina hilaris bangsi*.³⁶ The present fine series show considerable variation as regards the color of the under parts, some individuals being practically white below, and some showing faint streaking on the throat. Two specimens in juvenal dress (June 6 and 25) are darker and duller brown above, the pileum almost the same as the back, the latter with faint indications of bars; below they are duller grayish white than in the adult, with faint dusky squamations, while the black and white markings on the sides of the head and neck are less distinct, the superciliaries terminating behind in a fulvous spot.

³⁶ The only objection to such an arrangement is that entailed by the discontinuous distribution of these two conspecies, which are separated by the interposition of other forms not so closely related. It may very well be that *Henicorhina hilaris* is the Subtropical Zone representative of *H. prosthelauca*, surviving in two separate regions, but elsewhere eliminated through competition with *H. leucophrys*. At any rate, it is unlikely that *H. leucophrys anachoreta* of the Temperate Zone has been derived from *H. hilaris bangsi* of the zone below, although their respective ranges are now approximate, but not actually contiguous.

This interesting little wren is peculiar to the Santa Marta region, where it ranges from the upper part of the Tropical well into the Sub-tropical Zone, or from 2,000 to 7,000 feet, although most abundant between 4,000 and 6,000 feet. It is found only in heavy woodland, having a preference for dark ravines and thickets, where there are heaps of half rotted branches of fallen trees. It always keeps near the ground, and like many others of this family is very inquisitive and noisy, having a call-note, an alarm-note, and a beautiful whistling song of clear liquid notes. The nest is a domed-over structure, placed either on the tip of a horizontal limb or in a tangle of roots under an overhanging bank. Like certain other species of wrens it builds many false nests, which are always placed in conspicuous positions, while the real nest is most cunningly hidden away. The eggs are white, and vary from two to four in number, but are usually three.

380. *Henicorhina leucophrys anachoreta* Bangs.

Henicorhina anachoreta BANGS, Proc. New England Zool. Club, I, 1899, 84 (Paramo de Chiruqua; orig. descr.; type now in Mus. Comp. Zool.; meas.). —ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 180 (Bangs' reference). —HELLMAYR, Journ. f. Orn., LI, 1903, 530, in text, 531 (Sierra Nevada de Santa Marta; crit.). —SHARPE, Hand-List Birds, IV, 1903, 95 (ref. orig. descr.; range).

Henicorhina hilaris anachoreta RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 609 (diag.; range; ref. orig. descr.).

Eight specimens: San Lorenzo, Sierra Nevada de Santa Marta (6,000 and 8,000 feet), San Miguel, Macotama, and Paramo de Mamarongo.

Through the courtesy of Mr. Bangs these have been compared directly with two specimens from the type-series. The latter are paler brown above and on the flanks than most of the above, and the tail is also paler brown, but otherwise they agree well enough. The present form differs conspicuously from *H. hilaris bangsi* of lower altitudes in its shorter bill, grayer throat and breast (with the former more or less streaked with black), paler, less rufescent, more russet shade of the upper parts, tail, and flanks, and in particular in the greater extent of this brown color on the posterior under surface. It is clearly an offshoot of the *H. leucophrys* group as defined by Mr. Ridgway, being in fact most nearly related to *H. leucophrys guttata* (Hartlaub) of central and western Colombia, as already indicated by Mr. Hell-

mayr. It is easily distinguished from this latter form, however, by the much paler, less rufescent shade of the upper parts and flanks, and by the paler gray of the breast. The single San Lorenzo specimen differs from the rest of the series in the color of the pileum, which is sooty olive instead of russet, and in having the brown of the flanks more restricted, as in *H. hilaris bangsi*, but in other characters it agrees much better with the present form. This individual is the only one even suggesting intergradation between the two forms, and in the absence of further evidence it seems best to keep them specifically distinct, as Mr. Bangs insists.

This wren is so similar to *H. hilaris bangsi* as to be practically indistinguishable in life. There is a decided difference, however, in their altitudinal distribution, the present form occurring higher up than the other, as a bird of the upper Subtropical and Temperate Zones. On the San Lorenzo it probably does not range much below 8,000 feet, for the other species is plentiful there at 7,000 feet. In the Sierra Nevada, however, on account of the relatively lower temperature at corresponding altitudes, it is found as low down as 6,000 feet. It was not noted by the writer above 10,000 feet, although Mr. Brown's specimens were taken on the Paramos de Chiruqua and Macotama, at 11,000 to 12,000 feet. It is not a rare bird, but is difficult to secure on account of its habit of keeping near the ground in the most impenetrable thickets and in dark ravines, especially the latter. The song is very similar to that of *H. hilaris bangsi*, but is seldom heard, while the other species is constantly whistling, and is moreover very inquisitive.

381. *Troglodytes monticola* Bangs.

Troglodytes monticola BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 106 (Paramo de Chiruqua [type-locality] and Paramo de Macotama; orig. descr.; type now in coll. Mus. Comp. Zool.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 178 (Bangs' reference).—DUBOIS, Syn. Avium, I, 1901, 426 (ref. orig. descr.; range).—OBERHOLSER, Proc. U. S. Nat. Mus., XXVII, 1904, 200 (crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 572 (ref. orig. descr.; diag.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 338 (ref. orig. descr.; range).

Hemiura monticola SHARPE, Hand-List Birds, IV, 1903, 94 (ref. orig. descr.; range).

Four specimens: Paramo de Chiruqua.

This handsome *Troglodytes* belongs to the alticoline group of species

having broad and distinct superciliaries, of which *T. solstitialis* is the best known form. It appears to most closely resemble *T. brunneicollis* of Mexico, but is a perfectly distinct, isolated species. It is confined to the Paramo Zone of the Sierra Nevada de Santa Marta, having been discovered by Mr. Brown on the Paramos de Chiruqua and Macotama, at elevations ranging from 11,000 to 15,000 feet, although it has not been detected below the latter altitude by the present writer. It is found in the low, thick shrubs and bushes in the more sheltered parts of the paramo. It is a very shy bird, rarely coming out into the open, and being silent is easily overlooked.

382. *Troglodytes musculus atopus* Oberholser.

Troglodytes fuscus (not *Motacilla furva* Gmelin) SCLATER, Proc. Zoöl. Soc. London, 1859, 137 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1861, 23 ("Santa Marta").—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1880, 97, in text, 101 ("Santa Marta"; crit.).

Troglodytes tessellatus (not of D'Orbigny and Lafresnaye) SALVIN and GODMAN, Ibis, 1879, 198 (Marocaso; crit.); 1880, 117 (Santa Marta).

Troglodytes rufulus (not of Cabanis) SHARPE, Cat. Birds Brit. Mus., VI, 1881, 258 (Marocaso and Santa Marta; crit.).

Troglodytes musculus rufulus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 179 (Minca, Cacagualito, Cienaga, and Bonda; crit.).

Troglodytes musculus atopus OBERHOLSER, Proc. U. S. Nat. Mus., XXVII, 1904, 207 (Cacagualito; orig. descr.; type in coll. Am. Mus. Nat. Hist.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).

Troglodytes atopus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 337 (ref. orig. descr.; range).

Additional records: Fundación (Carriker).

Thirty-one specimens: Bonda, Don Diego, Cincinnati, Gaira, Rio Hacha, and Tucurinca.

Considerable discussion has arisen in the past over the proper name of the Santa Marta House Wren, as evidenced in the above list of references. Sclater referred the single specimen obtained from Verreaux to the species then called *Troglodytes fuscus*. The examples secured by Simons twenty years later were considered by Salvin and Godman to be the same as the Peruvian and Bolivian form (now known as *T. musculus tessellatus*), and by Sharpe to belong to *T. rufulus*, through a misidentification of the latter name. The latter author was the first to point out the peculiarities of the bird of the Santa Marta region,

which was formally described by Dr. Oberholser in 1904 under the name here adopted. It is to be distinguished from *T. musculus clarus* of Venezuela by the generally deeper, more uniform ochraceous shade of the under surface, evident on comparison of a series, but subject to considerable seasonal variation, worn specimens being appreciably paler, both above and below, than those in fresh plumage. There is also a great deal of variation affecting the spotting of the under tail-coverts. The Rio Hacha series are perhaps a little paler than the others. Individuals in juvenal dress, with short bills and faintly vermiculated under parts, bear dates of February 6 and May 9.

A species of the Tropical Zone, being found under practically all conditions from sea-level up to 4,000 feet, but most abundant in the lowlands, particularly in the desert region around Rio Hacha, and in the Rio Rancheria-Rio Cesar Valley. It was quite common also at Don Diego, in the old clearings. In its general behavior and song it reminds one very much of the House Wren of the eastern United States, which it resembles also in its nesting habits and eggs. A set of four eggs, collected at Don Amo, May 28, was received from Mr. Smith; they are a little larger, and rather more coarsely marked than the average egg of the House Wren of the north. The nest is composed of an indiscriminate mass of sticks and rubbish, with feathers much in evidence and wholly used for lining.

Several pairs have lately been observed on the plantation of the junior author (near Cincinnati), at nearly 6,000 feet. A pair appeared there in a new felling two years ago, and now there are several pairs. The place is completely surrounded by virgin forest, the nearest clearing being two miles distant.

383. *Pheugopedius latus* Bangs.

Thryothorus latus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 160 (Pueblo Viejo; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.), 180 (Palomina and Pueblo Viejo; plum.; descr. yg.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 179 (Onaca, Cacagualito, and Minca; plum.).—SHARPE, Hand-List Birds, IV, 1903, 84 (ref. orig. descr.; range).—BRA-BOURNE and CHUBB, Birds S. Am., I, 1912, 335 (ref. orig. descr.; range).
Pheugopedius latus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 529 (Santa Marta region; diag.; ref. orig. descr.).

Additional records: La Concepción (Brown).

Thirteen specimens: Bonda, Minca, Agua Dulce, Pueblo Viejo, and La Tigrera.

The relationship of this form to *P. rutilus* (Vieillot) is certainly very close, although it may be allowed to stand as a distinct species for the present. It differs from *rutilus* in the dusky spotting of the breast—a character which, however, varies greatly in different individuals, being scarcely apparent in No. 42,390, for instance, while in No. 38,086 the markings of this part are so heavy as to appear as streaks, and the middle of the abdomen is also distinctly spotted. In juvenal dress the spotting appears to be wanting, and it may become more prominent with age. An occasional individual of *rutilus* has the breast spotted, and it may very well be that the two forms intergrade.

A resident of the foothills section of the Tropical Zone, but not abundant anywhere in its range. It is partial to the low, tangled woodland growth lying between the semi-arid coast belt and the heavy forest of the higher altitudes, frequenting the undergrowth and masses of fallen trees and vines which abound in such situations. As a rule it is a silent bird, but occasionally it gives utterance to a rather pleasing song.

384. *Pheugopedius fasciatoventris fasciatoventris* (Lafresnaye).

Pheugopedius fasciato-ventris BAIRD, Rev. Am. Birds, 1864, 134 ("Santa Marta").

Thryothorus fasciato-ventris albigularis (not *Cyphorhinus albigularis* Sclater) RIDGWAY, Proc. Boston Soc. Nat. Hist., XXIII, 1888, 388, in text ("Santa Marta").

Thryothorus fasciiventris [sic] CHERRIE, Proc. U. S. Nat. Mus., XIV, 1891, 521 ("Santa Marta"; crit.).

Pheugopedius fasciato-ventris albigularis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 531 ("Santa Marta," in range).

Pheugopedius fasciato-ventris cognatus TODD, Proc. Biol. Soc. Washington, XXVIII, 1915, 80 (Fundación; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, III, 1915, 87 (ref. orig. descr.).

Ten specimens: Fundación and Tucurínca.

The proper disposition of the Santa Marta Banded-bellied Wren, as represented by a single specimen in the collection of the U. S. National Museum purporting to come from that region, has been the subject of considerable discussion in the past, to which the present writer, although with more ample material before him than was available to his predecessors, has more recently made an unenviable contribution. The difficulty all along has been that Lafresnaye's type-specimen of *fascia-*

toventris, which has been examined by Mr. Ridgway, and also by the writer in this connection, happens to possess characters which are purely individual in their nature. For a long time this type was the only other specimen from Colombia available for comparison in any American museum, but very recently a small but illuminating series of this form has come to hand from the States of Bolivar and Santander in that country. These prove beyond a reasonable doubt that the extent of the barring on the under surface, upon which authors have laid so much stress, is a variable feature, and is not in the least correlated with locality. In some individuals the barring extends right up to the white of the breast, while in others there is a black band, unbarred, on the chest, as in *P. fasciatoventris albigularis* of Panama. The barring on the tail also varies greatly, all the rectrices being uniformly thus marked in some individuals, while in others the markings are confined to the outer webs. Typical *fasciatoventris* differs from *albigularis* as follows: color of upper parts brighter, more rufescent; tail more regularly barred, and decidedly more rufescent; and upper part of auriculars dusky rufescent brown, lower part white. In the latter respect, as well as in the character of the barring in the tail, it curiously enough approaches the Costa Rican form, *melanogaster*, but differs of course in the more decided barring of the under parts.

All four adults from Fundación (August 14-18) are in rather worn and faded plumage. Two specimens from Tucurínca (September 18) are in juvenal dress, with ashy gray throat and breast, yellow bill (below), and indistinct bars on the posterior under surface. A third example taken on the same date, and another shot at Fundación on October 20, are in postjuvenal moult, the throat having become white and the bill dark, with some heavy barring on the abdomen.

This handsome wren was found only about Tucurínca and Fundación, in the heavy forest of the alluvial plain. It is evidently a bird of the littoral Tropical Zone, since but one example was taken in the higher ground of the lower foothills. It frequents masses of vines and tangled thickets in the heavy forest, keeping close to the ground. Like all the members of this genus, it is very shy and keeps well hidden from sight. The song was not heard, as the breeding season was over at the time.

385. *Heleodytes nuchalis* (Cabanis).

Campylorhynchus pardus BONAPARTE, Compt. Rend., XXXVIII, 1854, 61, footnote ("New Granada"; *nomen nudum*).—SCLATER, Proc. Zool. Soc. London, "1857," 1858, 271 ("Santa Marta"; orig. descr.; type in coll. Am. Mus. Nat. Hist.; crit.).—SCLATER, Cat. Am. Birds, 1861, 17, footnote ("Santa Marta"; ref. orig. descr.).—GRAY, Hand-List Birds, I, 1869, 192 ("New Granada").—GIEBEL, Thes. Orn., I, 1872, 563 (ref. orig. descr. [error]).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 5 (range).—SHARPE, Cat. Birds Brit. Mus., VI, 1881, 204, pl. 12, fig. 1 ("New Granada" [i.e., "Santa Marta"]; descr.; references).

Heleodytes pardus SHARPE, Hand-List Birds, IV, 1903, 76 (range; syn.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 332 (ref. orig. descr.; range).
Heleodytes nuchalis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 180 (Cienaga).

Heleodytes nuchalis nuchalis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 511 ("Santa Marta"; crit.).

Four specimens: Tierra Nueva and Fonseca.

Bonaparte named (but failed to describe) a supposed new wren from "New Granada" in 1854, calling it *Campylorhynchus pardus*. Sclater formally described the species under the same name a few years later, his type being a bird in the Lawrence collection said to have come from Santa Marta, whence Bonaparte's specimen had come also, according to Sclater. The type-specimen in question, kindly loaned by Dr. Chapman, agrees well in size and other characters with the above, differing only in having the upper parts more broadly streaked with white, and the buffy ochraceous wash on the nape more pronounced—doubtless owing to its fresher plumage. The plate in the *Catalogue of the Birds in the British Museum*, possibly based on Bonaparte's original specimen, is a very good representation indeed. Sharpe expresses a doubt as to whether *pardus* is really distinct from *nuchalis*, described from Venezuela by Cabanis in 1847. The Carnegie Museum is fortunate in having a large series from that country, as well as additional specimens of *pardus* from other parts of Colombia, affording an ample basis for comparison. At first sight it would seem as if *pardus* had more white on the rectrices, but there is a great deal of individual variation in this respect in both series, so much, indeed, that no valid separation could be maintained on such a ground, nor, indeed, on any other character, since the spotting below and above is precisely the same in both, making due allowance, of course, for the effects of wear, which is marked in birds of this group. *H. pardus*

(Sclater) will therefore fall as a synonym of *H. nuchalis* (Cabanis), the range of which extends from the lower Orinoco along the northern coast region of Venezuela into Colombia.

This bird was not uncommon along the Aracataca River some six or eight miles above its mouth. Three specimens were secured at this point, and more could easily have been taken, had they not been thought to be *H. curvirostris* at the time. It proved to be abundant also in the flood-plain forest of the Rio Rancheria at Fonseca in July, 1920. In habits it resembles that species. Mr. Smith's collector secured one at Cienaga, and it doubtless ranges over the lower Magdalena basin in the littoral Tropical Zone, not reaching as far east as the edge of the foothills.

386. ***Heleodytes curvirostris*** (Ridgway).

Campylorhynchus curvirostris RIDGWAY, Proc. Boston Soc. Nat. Hist., XXIII, 1888, 385 ("New Granada"; orig. descr.; type now in coll. Mus. Comp. Zool.; ex Lafresnaye, MS.).—DUBOIS, Syn. Avium, I, 1901, 420 (ref. orig. descr.; range).

Heleodytes curvirostris SHARPE, Hand-List Birds, IV, 1903, 75 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 331 (ref. orig. descr.; range).

Twenty-eight specimens: Fundación, Tucurínca, and Valencia.

This species was described by Mr. Ridgway from a single mounted specimen in the Lafresnaye collection (now deposited in the Museum of Comparative Zoölogy at Cambridge, Massachusetts), and in the thirty years which have elapsed, to the best of the writer's knowledge and belief, no other examples have come to hand except those of the above series, here recorded for the first time. These have been compared with the type in question, and found to agree well, due allowance being made for the faded condition of the latter, the size being the same, also the spotting beneath. The under surface in the type is paler, and the wings and tail browner, although both these parts show the same buffy tinge so characteristic of the present form. Compared with skins of *H. zonatus brevirostris* in the collection of the American Museum of Natural History from the Magdalena River, the present form differs in its smaller size, and in having the throat and breast more decidedly tinged with buffy, while the under tail-coverts are much richer ochraceous, the tail, wings, and upper tail-coverts more decidedly buffy or ochraceous (wanting in *brevirostris*), and the pileum

tinged with brownish. In juvenal dress, illustrated by three examples dated August 8, September 15, and September 21, the markings on the back tend to streaks rather than bars, and the under parts are nearly immaculate, the throat and breast being slightly squamate from dusky tips to the feathers, and the bars on the flanks faintly indicated.

The exact locality whence came the type-specimen of this species is not known. It proved to be a common bird in the vicinity of Fundación and Tucurín, in the littoral Tropical Zone, and was taken also at Valencia, in the Rio Cesar Valley. It is partial to open woodland, where there are scattered large trees with much brush beneath, and is always found in pairs or families, climbing about the trunks and branches of the trees, chattering, scolding, and quarreling almost as noisily as a flock of paroquets. The nest is similar to that of *H. minor albicilius*, being domed over, with a tunnel-like approach six to eight inches long, and is built of straws, weed-stalks, and rubbish, the whole presenting a most untidy appearance, an effect perhaps sought by the birds in order to divert attention from it. The nests examined had no eggs as yet.

387. *Heleodytes minor albicilius* (Bonaparte).

Buglodytes albicilius BONAPARTE, Compt. Rend., XXXVIII, 1854, 57, footnote ("Santa Marta"; orig. descr.; type in coll. Paris Mus. [?]).—SCLATER, Proc. Zool. Soc. London, 1856, 97 ("Santa Marta"; crit.).—GIEBEL, Thes. Orn., I, 1872, 504 ("Santa Marta"; ref. orig. descr.).

Heleodytes griseus (not *Furnarius griseus* Swainson) WYATT, Ibis, 1871, 115, 321 (Santa Marta; nesting).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 180 (Santa Marta, Cacaguárito, and Bonda; plum.); XXI, 1905, 294 (Bonda; descr. nest and eggs).

Campylorhynchus griseus SALVIN and GODMAN, Ibis, 1880, 116 (Santa Marta; habits; crit.).

Heleodytes albicilius SHARPE, Hand-List Birds, IV, 1903, 72 (Santa Marta, in range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 331 (ref. orig. descr.; range).

Heleodytes minor? (not of Cabanis) CHERRIE, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 145 (Santa Marta region; crit.).

Fifteen specimens: Bonda, Mamatoco, Fundación, Dibulla, Rio Hacha, and Tucurín.

The history of this bird goes back to 1854, when Bonaparte described a specimen obtained from Verreaux, and purporting to come from Santa Marta, under the name *Buglodytes albicilius*, both genus and species being new. Two years later, after examining the type,

Sclater identified it with *Furnarius griseus* Swainson, and this reference was accepted by most subsequent authors, including Dr. Allen in 1900. Shortly thereafter, however, Messrs. von Berlepsch and Hartert (*Novitates Zoologicae*, IX, 1902, 4) pointed out that Swainson's name had been misapplied by Sharpe in the *Catalogue of the Birds in the British Museum*, and really belonged to the gray-backed bird of Guiana and the lower Orinoco, which was specifically distinct from both *Helodytes minor* Cabanis and *H. bicolor* von Pelzeln. "Bogotá" skins were found to agree with the type of the latter. No specimens of this group from the interior of Colombia have been available for comparison in this connection, but it is clear both from von Pelzeln's original description and from Messrs. von Berlepsch and Hartert's remarks that such must be different as regards both size and color from the Santa Marta bird, as represented by our series. On the other hand Baird (*Review of American Birds*, 1864, 96) described the Santa Marta bird accurately, referring it to *H. griseus* with reservations. The correct allocation of the present form has been recently indicated by Mr. Cherrie, who, however, seems not to have been aware that it had been provided with a name long ago. It is a strongly marked geographic race of *H. minor*, differing in its generally darker coloration, the feathers of the upper back being blackish brown centrally, uniform with the nape, while the lower back, rump, upper tail-coverts, and wings externally are much deeper, more rufescent brown. The white markings on the tail vary considerably in both forms, but there is less of the barred effect on the middle rectrices so much in evidence in most specimens of *minor*.

A common and characteristic representative of the semi-arid and arid coast region of the Tropical Zone, as well as of the more humid lowlands to the west of the Sierra Nevada, reaching also the valley country on the opposite side of the range, as has lately been determined. It frequents shrubbery, cacti, and scrubby trees, but keeps nearer the ground as a rule than *H. nuchalis* or *H. curvirostris*, although like them it is a noisy, inveterate scold, and very inquisitive, with a partiality for the vicinity of farmhouses and the outskirts of little villages. Wyatt speaks of finding a pair building their nest high up in a gigantic cactus in a mimosa thicket near Santa Marta, and Simons found it very common there also. Mr. Smith's collectors secured a few nests and eggs from the vicinity of Bonda, all taken in

April. The nests are described by Dr. Allen as a mass of "grass, flag leaves, [and] soft, more or less distintegrated vegetable fiber of various kinds," with the entrance near the top, on one side. The eggs, from two to four in number, "vary greatly in the tone of the ground-color and in the color of the markings, the ground-color varying from nearly white to cream-color, and the markings in the palest set, are very pale lavender, deeper lavender in another set, and olive brown in the darkest set. In one set, they are pinkish lavender. The markings, very fine and more or less blended, cover almost uniformly the whole surface of the egg."

388. *Cistothorus alticola* Salvin and Godman.

Twenty-six specimens: San Miguel, Cerro de Caracas, and Taquina.

The present record involves an enormous extension of the known range of this species, heretofore supposed to be confined to the Roraima region of British Guiana. The Carnegie Museum had previously received a suite of specimens from northern Venezuela, however, so that it probably occurs at suitable altitudes throughout the intervening country. The Santa Marta birds differ from these Venezuelan specimens slightly, being grayer, less rufescent, above, with the superciliaries less distinct, while the sides and flanks average a little duller, less rufescent, but it is likely that these differences are due to their somewhat more worn condition, they having been taken later in the season (March 26–April 6), whereas the Venezuelan birds were secured March 1 to 3. Fortunately, it has been possible to compare the series directly with topotypical material in the collection of the Academy of Natural Sciences of Philadelphia, with which they have been found to agree in every respect. *Cistothorus alticola* belongs to that section of the genus having the pileum plain brown (or nearly so), and appears to be most closely related to *C. æquatorialis* Lawrence (of which *C. brunneiceps* Salvin is a synonym, according to Mr. Hellmayr) from western Ecuador. It differs from that form in its generally darker, less buffy coloration, and in having the tail less regularly banded with black, most of the rectrices, indeed, having a large unbarred black area on their inner webs. A few individuals show quite distinct spots on the under tail-coverts, and even on the flanks,

approaching thus the form described by Mr. Hellmayr from the Andes of Merida under the name *Cistothorus platensis merida*.³⁷

This little wren is an abundant bird in grassy lands throughout the Macotama Valley, between 4,500 and 8,000 feet. It may straggle above and below these limits, but not in any numbers, being essentially a species of the Subtropical Zone. It is hard to understand how it was overlooked by Mr. Brown in this section, although it is, to be sure, a very shy bird and difficult to shoot. It lives in the rank grass of the savannas, and cannot be flushed except early in the morning and just at dusk, when individuals will occasionally make short flights over the tops of the grass-stalks, dropping precipitately back again after flying from twenty to fifty feet. Most of the specimens secured were shot on the wing at such times, as it was seldom that any could be seen in the grass. There was a pair near our camp at San Miguel, which when all was quiet would creep up quite close in the grass, often scolding in an odd little rasping chirp, sounding more like an insect than a bird, but the moment anyone stirred they would be off like a flash, simply vanishing completely out of sight in the thick covert.

Family CORVIDÆ. CROWS, JAYS.

389. *Cyanocorax affinis affinis* von Pelzeln.

Cyanocorax affinis SALVIN and GODMAN, Ibis, 1879, 201 (Valle de Upar and Atanquez; crit.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 162 (Bonda, Minca, Las Nubes, Onaca, nad Cacagualito); XXI, 1905, 290 (Bonda; descr. nest and eggs).

Cyanocorax affinis affinis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 636 ("Santa Marta"; crit.).

Additional records: La Concepción (Brown).

Eighteen specimens: Bonda, Las Nubes, Mamatoco, Las Vegas, San Miguel, Minca, Agua Dulce, Cincinnati, and La Tigra.

The series includes two birds in juvenal dress, collected on May 20 and June 13 respectively. The color-pattern is that of the adult, but the black of the head, throat, and breast is replaced by brown, and the blue color on the head is scarcely evident.

³⁷ Since the above was written Dr. Chapman (*American Museum Novitates*, No. 2, 1921, 6) has described what appears to be the present bird under the name *Cistothorus platensis caracasensis*. Mr. Hellmayr (*Novitates Zoologica*, XXVIII, 1921, 255) insists that *alticola* is very close to *polyglottus*.

A common and widely distributed bird, ranging from sea-level up to 6,000 feet over all kinds of country, wherever some woodland is present. The only apparently suitable locality where it was not recorded was Don Diego, where its absence was soon noticed, nor was a single individual observed during a three weeks' stay.

Mr. Smith sent in no less than eleven nests, with three to five eggs each, collected at Bonda between April 5 and May 15. "The nests are bulky structures of sticks and coarse twigs, lined with finer twigs, placed in the fork of an upright branch. They are of the usual Jay style of architecture, but differ much among themselves in the character of the materials utilized, some being constructed externally of very coarse sticks, the largest of which have a diameter of 5 to 7 mm., while others are built wholly of fine twigs, and thus are much smaller and more artistic, with a breadth of about 9 inches, instead of 12 to 14 as in the nests of coarser material. In all the lining consists merely of fine twigs.

"Of the eleven sets of eggs, five have three eggs each, four have four each, and two have five each. The number of eggs to the set is thus exceptionally large for a bird of this region. The buffy white ground-color is nearly concealed by spots and blotches of olive brown, tinged more or less with grayish."

Family VIREONIDÆ. VIREOS.

390. *Cyclarhis flavipectus canticus* Bangs.

Cyclorhis flavipectus SCLATER, Proc. Zoöl. Soc. London, 1858, 448, part ("Santa Marta").—SCLATER, Cat. Am. Birds, 1861, 45 ("Santa Marta").—BAIRD, Rev. Am. Birds, 1866, 389 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 119 (Valencia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1883, 212 ("Santa Marta," in range).—GADOW, Cat. Birds Brit. Mus., VIII, 1883, 320 ("Santa Marta"; meas.).—ALLEN, Bull. Am. Mus. Nat. Hist., II, 1889, 131, in text ("Santa Marta"; crit.).

Cyclarhis flavipectus canticus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 142 ("Santa Marta"; orig. descr.; type now in Mus. Comp. Zoöl.; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 171 (Bonda; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 227 ("Santa Marta"; diag.; references), 231, footnote (meas.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 541 ("Santa Marta"; crit.).

Cyclorhis flavipectus var. *cantica* DUBOIS, Syn. Avium, I, 1901, 475 ("Santa Marta," in range; ref. orig. descr.).

Cyclorhis canticus SHARPE, Hand-List Birds, IV, 1903, 257 (ref. orig. descr.; range).

Cyclarhis gujanensis canticus HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 50, in text ("Santa Marta"; ref. orig. descr.; crit.).

Cyclarhis canticus BRABOURNE and CHUBB, Birds S. Am., I, 1912, 352 (ref. orig. descr.; range).

Seventeen specimens: Bonda, Santa Marta, Mamatoco, and Rio Hacha.

Cyclarhis flavipectus was described by Sclater many years ago from specimens from Trinidad, northern Venezuela, Santa Marta, and Bogotá. No particular type was designated at the time, but Dr. Gadow fixed on the Trinidad skin as such in 1883. Dr. Allen, writing a few years later, undertook to restrict the name *flavipectus* to the Colombian bird, describing that of Trinidad under a new name, *trinitatis*. This course would have been perfectly legitimate had it not been for Dr. Gadow's prior action in restricting the type, even though the species was not formally subdivided, and attention was called to the matter by Dr. Chapman (*Bulletin American Museum of Natural History*, VI, 1894, 27), who, however, referred the Colombian bird to the Central American form, *subflavescens*. It remained for Mr. Bangs, therefore, to give the present bird a distinctive name, which he did in 1898. Exception has been taken in some quarters to this separation, but a study of the present fine series in connection with another from Trinidad shows that it can be maintained. *C. f. canticus* is a pale form as compared with true *flavipectus*; the yellow of the throat and breast is paler, less greenish in tone, and averages more restricted; the posterior under parts are more decidedly buffy; the pileum is paler gray; and the back and wings paler, duller green. The size is practically the same. These differences, although subject, it is true, to considerable variation in both series, seem sufficiently constant on the whole to justify the recognition of two subspecies. The status of the Venezuelan birds will be discussed in another connection, as well as that of those from the interior of Colombia.³⁸

This bird seems to be partial to the semi-arid and arid coastal plain of the Tropical Zone, as indicated by all previous records as well as by the writer's own experience. None were noted at Don Diego or Fundación, but two specimens were shot at Rio Hacha, and it has recently been traced as far as Valencia, in the Rio Cesar Valley. It is

³⁸ Since the above was written Dr. Chapman (very properly, as we think) has described the form from the interior of Colombia as a new race, *Cyclarhis flavipectus parvus*.

not found, however, among the cacti and thorny scrub of this section, but among the green trees and shrubbery along the banks of the streams and irrigation ditches. The birds usually go in pairs, and are inclined to be very quiet, climbing about among the branches and making short flights and hops. The song is very sweet, but is seldom heard.

391. *Pachysylvia aurantiifrons aurantiifrons* (Lawrence).

Hylophilus hypoxanthus (not of von Pelzel) SALVIN and GODMAN, Ibis, 1880, 118 (Valencia).

Hylophilus aurantiifrons BANGS, Proc. Biol. Soc. Washington, XII, 1898, 142 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 172 (Bonda; crit.).

Pachysylvia aurantiifrons aurantiifrons RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 220 ("Santa Marta"; references).—HELLMAYR, Nov. Zööl., XIII, 1906, 12 ("Santa Marta"; in range).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 49, in text ("Santa Marta"; crit.).

Thirty-eight specimens: Bonda, Don Diego, Dibulla, Fundación, Minca, Mamatoco, La Tigrera, Tucurínca, and Valencia.

This *Pachysylvia* is strictly confined to the Tropical Zone, ranging from sea-level up to 2,500 feet, but seems more abundant at the lower levels. It was more numerous at Don Diego than at any other point, but strange to say was found only on the plantation grounds, among the rubber, cocoa, and other trees, none at all being seen in the forest. In other localities it was found in open woodland, and along roadsides, the banks of streams, etc. It is usually met with in pairs, and is very quiet and inconspicuous as it climbs about the branches in search of its insect food, sometimes sallying forth in a short flight and seizing them with a snap, in true vireo style.

392. *Pachysylvia flavipes flavipes* (Lafresnaye).

Hylophilus flavipes BANGS, Proc. Biol. Soc. Washington, XII, 1898, 142 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 172 (Bonda; crit.).

Twenty-three specimens: Bonda, Mamatoco, Dibulla, La Tigrera, Fundación, Rio Hacha, Santa Marta, and Valencia.

There is some difference between specimens taken early in September and those taken the latter half of April, spring birds being much less buffy below and less greenish, more grayish above, while the feet are also darker colored. October and November birds are inter-

mediate. With so much seasonal variation thus obtaining, it is necessary to use caution in comparing series for geographic variation. Some of the Santa Marta specimens, indeed, are very close to examples of *P. f. acuticauda* from the Orinoco region of Venezuela. No. 38,164 (September 1) is a young bird in postjuvénal moult. It is very pale below and more brownish above (the crown especially) than the adult, while the edgings of the remiges and rectrices are brighter green.

This species is even more strictly a bird of the lower Tropical Zone than its cousin *P. aurantiifrons aurantiifrons*, since it does not range higher up than 1,000 feet, and, indeed, is rarely seen above 500 feet. It prefers the more open woodland, shrubbery along the streams, and like situations, going about in pairs as a rule, and often in the company of other small birds of similar tastes and habits.

393. **Lanivireo flavifrons** (Vieillot).

Vireosylva flavifrons SALVIN and GODMAN, Ibis, 1880, 118 (Minca).

Vireo flavifrons SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1881, 194 (Minca, in range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 173 (Onaca).—ALLEN, Auk, XVII, 1900, 366 (Onaca; Minca, ex Salvin and Godman).

Lanivireo flavifrons RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 163 (Minca and Onaca, in range).

This vireo appears to be of only casual occurrence in Colombia as a winter visitant, its migration ordinarily not extending beyond Panama. Simons shot a specimen at Minca on February 13, 1879, and Mr. Smith sent back a single specimen also, taken at Onaca on December 28, 1898.

394. **Vireosylva josephæ mirandæ** (Hartert).

Vireo josephæ (not of Sclater) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 105 (Paramo de Macotama).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 172 (Valparaiso, El Libano, and Las Nubes).

Vireosylva josephæ chiriquensis (not of Bangs) RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 161 (Paramo de Macotama, in range; references).

Vireosylva josephæ josephæ CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 540 ("Santa Marta"; crit.).

Fourteen specimens: Las Nubes, El Libano, Valparaiso, Cincinnati, San Miguel, Cerro de Caracas, and Heights of Chirua.

Comparison of an ample series from various parts of the range of this species demonstrates that there are only three recognizable forms,

costaricensis falling as a synonym of *chiriquensis* (unless, indeed, as is of course possible, specimens from southwestern Costa Rica, upon which the above assertion is based, do not really represent *costaricensis*, described from San José). At any rate, Mr. Ridgway is clearly mistaken in referring Santa Marta specimens to *chiriquensis*, as shown by an actual comparison with the type-series of this form. Birds from the Santa Marta region agree in their slightly paler coloration below with a series from the mountains of Venezuela (for which Dr. Hartert has recently proposed the above name), as compared with another series from the Eastern and Western Andes respectively, which may be regarded as true *josephae*. Summer specimens are more worn, and of course paler, than birds taken at other seasons, and due allowance must be made for this fact in making comparisons. At most the characters assigned to *miranda* are very slight, and entirely bridged over by individual variation in both series, so that it is often impossible to satisfactorily allocate a given specimen, and we are recognizing it only with reservations.

This vireo ranges ordinarily from about 4,000 to 7,000 feet in the Subtropical Zone, so that the record by Mr. Brown from the Paramo de Macotama, at 11,000 feet, seems open to question. It seems to be a rare bird anywhere, in this region as well as in Costa Rica and Venezuela, judging from the writer's experience. It is essentially a woodland bird, being found in or along the edge of the forest, rarely in isolated trees. It keeps high up in the tree-tops, is rather quiet, and on account of its inconspicuous coloration is difficult to make out in the thick foliage.

395. *Vireosylva olivacea* (Linnæus).

Vireosylva olivacea SALVIN and GODMAN, *Ibis*, 1880, 118 (Santa Marta).

Vireo olivaceus ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 173 (Salvin and Godman's reference).—ALLEN, *Auk*, XVII, 1900, 366 (Santa Marta, *ex* Salvin and Godman).—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XXI, 1905, 277 (Don Diego; Salvin and Godman's record).

Ten specimens: Mamatoco, La Tigra, and Fundación.

This well-known North American bird is a common winter resident in the lowlands all around the mountains, but does not range into the foothills. It was first recorded from this region by Salvin and Godman, on the strength of a single specimen shot by Simons near Santa Marta, April 3, 1879. Only one of the above series was taken

in the fall migration, this being the Fundación specimen, shot October 11, 1915. The dates for the remainder run from April 21 up to as late as May 5—a date when the van of the species has already reached the latitude of Pennsylvania on its northward migration. Mr. Smith sent in a specimen from Don Diego dated May 3, 1899, and there is another from the same collector, not recorded by Dr. Allen, from Buritaca, September 18, 1899.

396. *Vireosylva chivi vividior* Hellmayr.

Vireo chivi agilis (not *Lanius agilis* Lichtenstein) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 142 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 172 (Bonda, Minca, Santa Marta, Quebra Concha, and Cacagualito).—BANGS, Proc. New England Zool. Club, III, 1902, 73 ("Santa Marta"; meas.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 293 (Bonda; descr. nest and eggs).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 159 (Santa Marta).

Twenty-one specimens: Bonda, Minca, Mamatoco, Dibulla, Don Diego, Santa Marta, La Tigrera, and Valencia.

This is the form which has passed under the name *agilis* of Lichtenstein, until it was shown by Mr. Hellmayr (*Novitates Zoologicae*, XIII, 1906, 11) that this name was a pure synonym of *chivi*. Mr. Hellmayr forebore renaming the northern form until recently (*Verhandlungen Ornithologischen Gesellschaft in Bayern*, XI, 1915, 315) when he called the Trinidad bird *vividior*. Comparison of the above series with another from Trinidad discloses no essential differences. The form appears to be well characterized as compared with a series of true *chivi* from Bolivia. Such variation as obtains is due to season alone, wear fading the bright colors of the fresh plumage.

A fairly common bird throughout the whole of the lowlands, outside of the Goajira region proper, being characteristic of the Tropical Zone, and not going above 2,500 feet. Recently it has been found at Loma Larga, also on the flood-plain of the Rio Guatapuri, and at Valencia. Its habits and habitat are the same as those of the other species of the genus, and its nest also is similar. Dr. Allen describes the two nests sent in by Mr. Smith from Bonda, collected May 16 and June 2, as being of the "typical *Vireo* style, being suspended from the fork of a horizontal branch, the twigs supporting them being woven into the rim of the nest. They are composed of grass blades and soft vegetable fibers, mixed with a little plant down. . . . The eggs [two] are white, with a few blackish dots, mostly about the larger end."

397. *Vireosylva flavoviridis flavoviridis* Cassin.

Vireo flavoviridis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 173 (Bonda).

Vireosylva flavoviridis flavoviridis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 144 (Santa Marta region; crit.).

Seventeen specimens: Bonda, Buritaca, Mamatoco, Gaira, Punto Caiman, Tucurinca, and Fundación.

This species is fairly common throughout the lowlands, not going above 1,000 feet, and being especially numerous in the section from Santa Marta to Fundación. There is no evidence, however, that it breeds anywhere in this region. Mr. Smith's specimens were all shot between August 12 and October 13, while the dates for those above listed are also in the same months, up to October 20. Mr. Cherrie (*Auk*, VII, 1900, 329-331), writing of its habits as observed in the vicinity of San José, Costa Rica, says that it is only a summer resident there, disappearing at the beginning of the dry season (September), and not reappearing until April. Unfortunately very few of the South American records for this species have exact dates attached, but Salvin and Godman (*Biologia Centrali-Americana*, Aves, I, 1881, 189) intimate that the individuals observed in the far south may have been there for the winter only. At any rate, all the available information goes to show that *V. flavoviridis* is as strictly migratory as certain of its northern congeners, and it seems best to regard it as a winter resident, or perhaps only a transient visitant, in the Santa Marta region.

398. *Vireosylva calidris calidris* (Linnæus).

Vireo calidris calidris ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 277 (Bonda and Masinga [Vieja]; crit.).

Dr. Allen records two specimens referable to this form, one from Bonda, August 19, and the other from Masinga Vieja, September 7. The writer has examined the specimens in question, and fully agrees with this determination. It is presumably a winter resident in the Santa Marta region, although both the records lie in the season of migration.

399. *Vireosylva calidris barbatula* (Cabanis).

Vireo calidris barbatula ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 173 (Bonda); XXI, 1905, 277 (Bonda; crit.).

Three specimens: Mamatoco and Tucurinca.

After careful comparison we refer these three specimens to *V. c.*

barbatula without hesitation, as well as the series collected by Mr. Smith, already studied by Dr. Allen. They agree precisely with a series from the Isle of Pines.

Mr. Smith took eleven specimens of this form at Bonda between August 17 and September 18, and one also at Buritaca, as against only two of typical *calidris*. The writer has found it to be rare, although it may have been confused in life with *V. chivi* and others, all having more or less the same habits and haunts, preferring the banks of streams, edges of woodland, and scattered trees. The dates of capture of these three examples are April 15, 1913, September 17, 1913, and September 16, 1915, but the bird is almost certainly a winter resident.

Family HIRUNDINIDÆ. SWALLOWS.

400. *Iridoprocne albiventer* (Boddaert).

Four specimens: Fundación.

This swallow was taken only at Fundación, where it was found along the shores of the river, usually flying over the water, but occasionally perching on dead trees along the banks. Four birds were shot on August 10, 1913; they are precisely similar to others from Venezuela. The species has an extensive range in South America, but this is the first record for the Santa Marta region. In July, 1920, a few were noted at Rio Hacha, flying over the water.

401. *Hirundo rustica erythrogaster* Boddaert.

Hirundo erythrogastra ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 277 (Buritaca).

Ten specimens: Buritaca and Rio Hacha.

Probably a winter resident, although the only available records were made during the season of migration. Mr. Smith sent in a series of young birds, all from Buritaca, collected from September 6 to 29, 1899. It was present in large numbers around Rio Hacha during the first week of May, 1914, frequenting the banks of the river near its mouth, circling about over the surrounding flats and perching on the dead mangrove stubs along the edge of the water.

402. *Pygochelidon cyanoleuca* (Vieillot).

Atticora cyanoleuca BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 105 (La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 171 (Bangs' reference).

Five specimens: San Miguel, Paramo de Mamarongo, and Rio Hacha.

A fairly common bird about San Miguel and on the surrounding mountains up to 10,000 feet, circling tirelessly about over the cliffs and grass-covered slopes, and over the mesa around the camp. It breeds in crevices among the rocks of the cliffs, into which a pair were repeatedly seen to enter, at a point which was quite inaccessible by ordinary means. It was never seen to perch anywhere else, and all the individuals secured were shot on the wing. A single young bird was shot at Rio Hacha on May 1, from the immense flock of Barn Swallows found there at the time. This was probably a bird which had strayed down from a higher altitude after the breeding season. Mr. Brown met with the species at La Concepción, at an altitude of 3,000 feet, securing seven specimens. It is of course a Sub-tropical Zone form.

403. *Orochelidon murina cyanophæa* (Cabanis).

Three specimens: San Lorenzo.

As shown by their soft skulls, all of these examples are immature. They correspond very well to the description of *Atticora cyanophæa* Cabanis (*Journal für Ornithologie*, IX, 1861, 92), which Baird (*Review of American Birds*, 1865, 312) identified as the young of *Petrochelidon murina* Cassin. Cabanis admitted that his specimens were immature, but considered that the adult bird would be readily distinguishable from "*Atticora*" (*Pygochelidon*) *cyanoleuca*, which is quite true. In the above specimens the under parts down to the crissum are almost uniform, the throat not being appreciably browner than the rest of the under surface, there being, however, a very faint suggestion of a brownish pectoral band. In this respect these specimens, therefore, would thus seem to differ very decidedly from the description and figure of the young bird given by Sharpe and Wyatt in their *Monograph of the Hirundinidae*, II, 1894, 499, pl. 96. It is true that in this work, as well as in Volume X of the *Catalogue of the Birds in the British Museum*, two perfectly distinct species have been confounded under the head of *Atticora cinerea* (cf. Ridgway, *Bulletin U. S. National Museum*, No. 50, III, 1904, 27, footnote). Fortunately there are available (in the collection of the American Museum of Natural History) a small series of adults of this swallow from the Bogotá

region of Colombia, which, when compared with topotypical examples from Ecuador, prove to be lighter (less sooty) and less uniform below, and are clearly entitled to subspecific recognition. They differ from the Santa Marta skins in being darker below and more glossy above; the tail, too, is more deeply forked, but there is every reason to believe that they belong to the same form. As pointed out by Baird (*l. c.*) and by von Berlepsch (*Proceedings Zoölogical Society of London*, 1884, 287) it is very doubtful if *Hirundo cinerea* of Gmelin really refers to the bird afterwards called *Petrochelidon murina* by Cassin.

These birds were taken around the summit of the "Cerro Quemado," at an altitude of 8,300 feet, where they seemed to be breeding in the cliff which drops perpendicularly down from the summit on the south side. There seemed to be about thirty in this colony, but they were very hard to shoot. None were seen at any other point.

404. *Stelgidopteryx ruficollis æqualis* Bangs.

Stelgidopteryx uropygialis (not *Cotyle uropygialis* Lawrence) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 142 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 171 (Bonda).

Stelgidopteryx ruficollis æqualis BANGS, Proc. New England Zoöl. Club, II, 1901, 58 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zoöl.).—DUBOIS, Syn. Avium, II, 1903, 1079 ("Santa Marta," in range; ref. orig. descr.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—HELLMAYR, Nov. Zoöl., XIII, 1906, 13 ("Santa Marta," in range).

Stelgidopteryx æqualis BRABOURNE and CHUBB, Birds S. Am., I, 1912, 328 (ref. orig. descr.; range).

Stelgidopteryx ruficollis uropygialis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, III, 1904, 63 ("Santa Marta"; meas.; references).

Fourteen specimens: Bonda, Santa Marta, Don Diego, Tucurinca, and Fundación.

September and October specimens are in the freshest plumage. May birds are worn and faded, with the yellow of the abdomen very pale, almost white. No. 49,604 (October 12) is just completing the moult of the remiges.

The present form was described by Mr. Bangs in 1901 from a Santa Marta specimen, but is known to range over the most of northern South America. In the Santa Marta region it is a fairly common bird throughout the lowlands of the Tropical Zone, except in the arid Go-

jira Peninsula, reaching, however, Loma Larga and Fonseca, in the valley of the Rio Rancheria. It is perhaps most abundant around Fundación and Tucurínca, but there are several records for other localities to the northward. A nest was found beside the road between Mamatoco and La Tigrera on June 12, 1919. It was a flimsy affair, composed of twigs, vegetable fibers, and a few feathers, and placed in a small cavity excavated in the face of a nearly vertical bank. It contained four white eggs upon the point of hatching.

405. **Progne chalybea chalybea** (Gmelin).

Three specimens: Mamatoco and Fundación.

A considerable flock of these birds lives in the town of Santa Marta, breeding around the housetops, where they can not be shot. At Fundación a single one was seen and secured, and two more at Mamatoco, out of a half-dozen seen. It proved to be fairly common along the river at Fonseca in July, 1920, and was noted also at Arroya de Arenas. The species has an extensive distribution in tropical America, and it is odd that it is not commoner in this particular region.

Family TERSINIDÆ. SWALLOW-TANAGERS.

406. **Tersina viridis occidentalis** (Sclater).

Procnias occidentalis SCLATER, Cat. Am. Birds, 1861, 55 ("Santa Marta").

Procnias tersa (not *Ampelis tersa* Linnæus) SALVIN and GODMAN, Ibis, 1879, 199 (Manaure; crit.).

Procnias tersa occidentalis BANGS, Proc. Biol. Soc. Washington, XII, 1898, 179 (Palomina, San Miguel, and San Francisco).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 50 (Manaure and Minca).

Procnias viridis (not *Hirundo viridis* Temminck) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 173 (Minca and Valparaiso).

Procnias carulea occidentalis VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1010 ("Santa Marta," in range).

Additional records: La Concepción, Chirua (Brown).

Forty-four specimens: Minca, Cincinnati, San Lorenzo, La Tigrera, Mamatoco, Las Vegas, and Pueblo Viejo.

On the proper name of this species consult Ridgway, *Bulletin U. S. National Museum*, No. 50, IV, 1907, 880, footnote. Santa Marta specimens are of course referable to the form *occidentalis*, described from "Bogotá." The present series includes several immature male birds, in a peculiar plumage, variously intermediate between that of

the adult male and adult female. As all have hard skulls, and moreover were collected at various times of the year (August, October, and April), it is fair to presume that they represent birds in first nuptial dress.

This strikingly colored species ranges from the upper Tropical into the lower Subtropical Zone, being found on the north slopes of the San Lorenzo from the lower edge of the foothills up to 5,000 feet at least, but is most numerous above 2,000 feet. It was recorded by Simons from the foothills of the Eastern Andes, while both Mr. Brown and the writer have taken it on the north slopes of the Sierra Nevada. While the birds wander a great deal in search of food (being fruit-eaters exclusively), they breed only between 3,000 and 5,000 feet. The nest is built in a hole in a bank excavated by the female, as shown by one found in such a situation at Las Vegas. In this case the nest was built at the far end of a tunnel about two feet long dug in the face of a bank along the road. The hole was about three inches in diameter, with the end slightly enlarged to take the frail nest of rootlets and other fibers. On May 14 it contained two slightly incubated eggs, which were pure white in color. On June 12, 1919, another nest in an almost identical situation was found by the roadside just above Agua Dulce at about 3,300 feet. It contained two newly hatched young.

Family MNIOTILTIDÆ.³⁹ WOOD-WARBLED.

407. *Basileuterus delatirii mesochrysus* Selater.

Basileuterus mesochrysus SALVIN and GODMAN, Ibis, 1879, 198 (Manaure; crit.); 1880, 117 (Chirua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1881, 176 (Sierra Nevada de Santa Marta, in range).—SHARPE, Cat. Birds Brit. Mus., X, 1885, 396 (Manaure).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 144 ("Santa Marta"), 180 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 176 (Bonda, Minca, and Cacagualito).

Additional records: San Antonio, San Francisco, La Concepción (Brown).

Twenty-six specimens: Bonda, Minca, Cacagualito, Mamatoco, Agua Dulce, Cincinnati, La Tigrera, and Pueblo Viejo.

³⁹ It has recently been proposed (Oberholser, *Proceedings Biological Society of Washington*, XXXII, 1919, 46) to substitute *Compsothlypidae* for this group. But by the International Code *Compsothlypis* itself would fall in favor of the earlier *Parula*, although there seems to be a tacit understanding to ignore the provision of the Code requiring such a change.

According to the writer's views *Basileuterus rufifrons* (Swainson) and *Basileuterus delatirii* Bonaparte represent two specific types, with the latter of which *Basileuterus mesochrysus* Sclater is of course conspecific.

Nos. 42,273-4 (June 19) are in juvenal dress, in which state the whole pileum is olivaceous, duller than the back, the superciliary stripe merely indicated. Other birds dated August 16 to 18 are in various stages of the postnuptial moult. Adults vary somewhat as regards the extent of the rufous on the pileum and the width of the grayish color on the hindneck.

A species which is rarely seen outside of the "dry forest" of the foothills between 800 feet and 3,000 feet, but commoner above 1,200 feet, being thus essentially characteristic of the middle part of the Tropical Zone. In habits it is much like *B. cabanisi indignus*.

408. *Basileuterus cabanisi indignus* Todd.

Basileuterus cabanisi (not of von Berlepsch) SALVIN and GODMAN, Ibis, 1880, 117 (Minca).—VON BERLEPSCH, Journ. f. Orn., XXXII, 1884, 283 (Santa Marta [region]; *ex* Salvin and Godman).—SHARPE, Cat. Birds Brit. Mus., X, 1885, 384 (Minca; descr.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 144 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 176 (Minca, Las Nubes, and Onaca).—SHARPE, Hand-List Birds, V, 1909, 123 (Sierra Nevada de Santa Marta, in range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 551 (Onaca; crit.).

Basileuterus cabanisi indignus TODD, Proc. Biol. Soc. Washington, XXIX, 1916, 95 (La Tigrera; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARTA, Bull. Soc. Cien. Nat. Inst. La Salle, IV, 1916, 117 (reprint orig. descr.).

Fifteen specimens: Bonda(?), Las Nubes, Onaca, La Tigrera, Las Vegas, and Minca.

Basileuterus cabanisi was described from specimens taken at San Esteban and Puerto Cabello, Venezuela. Shortly thereafter a single specimen was received from Simons, collected at Minca, in the Santa Marta region of Colombia, which was identified by von Berlepsch as belonging to the same form. Mr. Brown secured only one specimen in this region, and Mr. Smith's collectors only eight. Recently the Carnegie Museum has received a series of no less than nineteen examples from various localities in Venezuela, which, compared with the Santa Marta series, show that the latter may be recognized by having little or no Mars yellow on the crown, which is always so conspicuous a

feature in the Venezuelan birds. Some of the latter very closely approach *B. auricapillus olivascens* of Trinidad, etc., but only one of the Santa Marta skins of the present form has more than a trace of Mars yellow on the middle of the crown, this part being nearly plain dull lemon yellow. While there are thus individual exceptions to the rule, the difference pointed out seems sufficiently constant to admit of the subspecific separation of the Santa Marta birds, which have been duly provided with a name by the writer, as above.

A species which is essentially characteristic of the foothills section of the Tropical Zone, ranging from 1,000 to 3,000 feet above sea-level, but most abundant between 2,000 and 3,000 feet in the more humid forests on the northeast slopes of the San Lorenzo and Horqueta. It has not been taken anywhere in the lower Macotama Valley, but was found to be fairly common at Loma Larga, at the eastern extremity of the main Sierra Nevada. Like all the species of this genus, it is found rather low down in the forest, flitting about from shrub to shrub and among the lower branches of the trees. A faint chirping and and twittering is the only sound it has ever been heard to make.

409. ***Basileuterus conspicillatus*** Salvin and Godman.

Basileuterus conspicillatus SALVIN and GODMAN, Ibis, 1880, 117 (San José; orig. descr.; type now in coll. Brit. Mus.).—REICHENOW and SCHALOW, Journ. f. Orn., XXVIII, 1880, 323 (reprint orig. descr.).—SHARPE, Cat. Birds Brit. Mus., X, 1885, 389 (San José; descr.).—SALVIN, Ibis, 1887, 130, in text (Sierra Nevada de Santa Marta).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 551, in text (crit.).

Basileuterus cinereicollis (not of Sclater) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 160 (Pueblo Viejo), 180 (San Francisco and Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 175 (Las Nubes, Onaca, Valparaiso, and El Libano; plum.; crit.).—SHARPE, Hand-List Birds, V, 1909, 123 (range; syn.).

Additional records: Chirua, La Concepción, San Miguel (Brown).

Twenty-eight specimens: Las Nubes, Valparaiso, Cincinnati, San Lorenzo, Las Taguas, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, Minca, and Pueblo Viejo.

The first two examples of this warbler taken in the Santa Marta region were promptly described by Salvin and Godman as a new species, *Basileuterus conspicillatus*, comparison being made with *B. coro-*

natus. Mr. Bangs, however, referred the four specimens received by him to *B. cinereicollis* without comment, while Dr. Allen, apparently following this lead, and with a large series at his command, went into the matter in considerable detail, calling attention to the variation in the color of the crown-spot, which in some individuals is yellow, in others decidedly orange, with all intermediate stages in evidence. As this was precisely the difference presumed to exist between *B. cinereicollis* on the one hand and *B. conspicillatus* on the other, Dr. Allen proposed to relegate the latter name to synonymy. It is fairly certain that this variation is not due to age. No. 38,138 (August 26), an individual which is emerging from the juvenal dress (in which all the colors would appear to be more brownish and buffy than in the adult), is acquiring an orange rufous, not yellow, crown-spot.

More recently Mr. Hellmayr (as quoted by Sharpe, *l.c.*) has indorsed and emphasized Dr. Allen's view of the case. But a series of specimens from the State of Santander, Colombia, lately received by the Carnegie Museum, were found to differ decidedly and constantly from Santa Marta examples, being darker, duller olive green above, with the lateral crown-stripes less distinct, and having the gray of the throat extended over the breast. It was clear that if Mr. Hellmayr was correct in his conclusions this interior form could not be typical *B. cinereicollis*, but would require a new name. Accurate colored sketches of both forms were accordingly prepared and sent to Dr. Ernst Hartert, with a request to compare them with the types in the British Museum and report the result. In reply Dr. Hartert writes as follows: "The bird from Santander agrees well with the type [of *B. cinereicollis*] and another specimen from Bogotá collections and a similar one in our Museum, except that the grey is darker on the throat, but probably your drawing has the throat a bit too light, or it may be lighter in a clean well-made skin of recent date than in somewhat ancient native-made Bogotá skins.

"There is no doubt whatever that *cinereicollis* from Bogotá collections is quite different from *conspicillatus* from Santa Marta, of which we have 6 and the British Museum 5 or 6 skins—agreeing well with your sketches. The Bogotá form has the grey on the throat more extended over the jugular region, as far as the chest, and the upper-side is darker. Sharpe's note in the Hand-List may be due to a misunderstanding, as our specimens are labelled as two subspecies in

Hellmayr's own handwriting—moreover, why should Sharpe want Hellmayr's opinion, as he could compare both types himself whenever he liked to do so?"

This should suffice to settle the matter along the lines laid down by Dr. Chapman in his recent work on Colombian birds. Dr. Allen's mistake was due to the fact that he had no specimens from the interior of Colombia for comparison.

An abundant bird in the forest between 2,500 and 7,000 feet, but most numerous between 3,500 and 5,500 feet. It is always met with in pairs or families, flitting about among the shrubbery and low trees, and is usually silent until disturbed, when it chirps noisily. The nest is domed over, like that of the Ovenbird of the north, and is placed in a crevice under an overhanging bank or among the roots of a tree. The eggs are three or four in number, white, thickly speckled and dotted with chestnut brown.

410. *Myioborus flavivertex* (Salvin).

Setophaga flavivertex SALVIN, Ibis, 1887, 129, pl. 4 (Sierra Nevada de Santa Marta; orig. descr.; type now in coll. Brit. Mus.; crit.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 180 (Macotama).—BANGS, Auk, XVI, 1899, 137, in text (range).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 176 (El Libano).—DUBOIS, Syn. Avium, I, 1901, 441 (ref. orig. descr.; range).

Myioborus flavivertex SHARPE, Hand-List Birds, V, 1909, 121 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 357 (ref. orig. descr.; range).

Twenty-six specimens: El Libano, San Lorenzo, Sierra Nevada de Santa Marta (6,000 feet), San Miguel, Cerro de Caracas, Macotama, Paramo de Mamarongo, and Heights of Chirua.

These all have the front and short superciliaries decidedly tinged with tawny, especially above the eye, instead of pure white, as given in the original description and represented in the plate. The under tail-coverts vary from yellow to almost pure white. No. 37,914 (July 16) is completing the postjuvenile moult, the head being dull brown, not black, and the yellow crest being duller and more restricted.

The first specimens of this handsome little warbler were received from one of Whitely's correspondents in this region, and described and figured by Salvin. Mr. Brown obtained a pair at Macotama, and Mr. Smith's collectors secured a few at El Libano, on the San Lorenzo.

It is found on this latter ridge wherever forest exists, but according to the writer's experience not below 7,000 feet. In the Sierra Nevada it ranges in the forest between 5,000 and 10,000 feet, being thus a species of the Subtropical Zone. It is not a common bird, and is usually seen in pairs, keeping well to the tree-tops, flitting restlessly from branch to branch and from tree to tree.

A nest sent in by Mr. Smith was collected at El Libano on May 20. It is a bulky affair, with every appearance of having been built on the ground, being composed outwardly of a layer of moss, succeeded by a mass of vegetable fibers of various kinds, and lined with fine weed-stalks. The two eggs are rather elongate oval, measuring 20×13 , and are white, speckled with reddish brown, about like those of the Canadian Warbler (*Wilsonia canadensis*).

411. *Myioborus verticalis* (D'Orbigny and Lafresnaye).

Setophaga verticalis SALVIN and GODMAN, Ibis, 1880, 118 (San Sebastian).—SHARPE, Cat. Birds Brit. Mus., X, 1885, 420 (San Sebastian and San Salvador).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 180 (San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 80 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 176 (Las Nubes, Valparaiso, and El Libano).

Additional records: Macotama, La Concepción, Chirua (Brown).

Twenty specimens: Las Nubes, Valparaiso, Cincinnati, Las Taguas, Sierra Nevada de Santa Marta (6,000 feet), Las Vegas, Pueblo Viejo, and Heights of Chirua.

Some years ago Dr. Chapman described a supposed race of this species from northeastern Venezuela under the subspecific name *pallidiventris* (*Bulletin American Museum of Natural History*, XII, 1899, 153). Comparison of the type-series with Santa Marta birds shows that this form cannot be maintained, at least on the assumption that the latter are the same as typical *verticalis* (described from Bolivia). Some of the Santa Marta skins are practically as pale below as the type of *pallidiventris*, while one skin referred to the latter by the describer is as much tinged with orange below as the majority of the Santa Marta birds. Moreover, a series from the Sierra de Carabobo, Venezuela, range from almost pure yellow below to pale orange, confirming the impression gained from a study of the preceding series. Compare, in this connection, the remarks of Messrs. Hellmayr and von Seilern (*Archiv für Naturgeschichte*, LXXVIII, 1912, 48), who

call attention to the inconstancy of the characters attributed to this form.

The present series show considerable variation, apparently individual, with regard to the extent of the chestnut crown-patch. The species is closely related to the Central American *M. aurantiacus*.

On the San Lorenzo and Horqueta this species ranges in the heavy forest between 4,000 and 6,500 feet, being seen but rarely below or above that belt. In the Sierra Nevada, however, its range drops down to 2,000 feet, at least on the north slope. It is a common bird throughout its range, going about in pairs, twittering and chirping. It loves the company of other species having similar haunts and habits, and may invariably be found among the little bands of small birds which roam through the forest, after the manner so prevalent, and yet so peculiar, in the tropics.

412. *Setophaga ruticilla* (Linnæus).

Setophaga ruticilla SALVIN and GODMAN, Ibis, 1879, 199 (Atanquez); 1880, 118 (Minca; habits).—SHARPE, Cat. Birds Brit. Mus., X, 1885, 411 (Atanquez and Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 144 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 176 (Bonda and Valparaiso).—ALLEN, Auk, XVII, 1900, 366 (Bonda and Valparaiso).—COOKE, Bull. Biol. Survey, No. 18, 1904, 132 (Santa Marta references).

Additional records: Chirua, La Concepción (Brown); Dibulla (Carriker).

Fourteen specimens: Bonda, Cincinnati, La Tigrera, Don Diego, Pueblo Viejo, and Chirua.

An abundant bird during the winter months in the mountains, but much rarer in the lowlands. Its habits are practically the same as in the north, except that it does not sing. Simons speaks of finding it in the densest forest in the tops of the highest trees, where it is very hard to see, and can only be shot with very large charges. The first individual observed in the fall of 1914 was a male noted on September 19, at Las Vegas. The earliest date of arrival, however, is represented by a specimen in the Carnegie Museum sent in by Mr. Smith, which was collected on August 24, 1898. This is in line with what is known of the species' migration at this season elsewhere. It was noted at La Tigrera, and the specimen secured, at the remarkably late spring date of May 1, 1913—a time when the bulk of the species has

reached the Middle States in northward migration. There are specimens in the collection of the American Museum of Natural History from Las Nubes and Onaca.

413. **Hemispingus basilicus** Todd. (Plate VI.)

Hemispingus basilicus TODD, Proc. Biol. Soc. Washington, XXVI, 1913, 170 (San Lorenzo; orig. descr.; type in coll. Carnegie Mus.).

Nine specimens: San Lorenzo, Macotama, and Paramo de Mamarongo.

Description.—Adult male: back, wings externally, and tail dark warbler green; whole head and neck black, with broad and conspicuous superciliary and vertical stripes of pale grayish white, the vertical stripe strongly tinged anteriorly with citron yellow; an isolated broad white stripe or patch behind the ear-coverts, and some white mottling below the eye; throat (narrowly) dull white, more or less speckled with dusky; rest of under parts lemon chrome, the sides and flanks darker, shaded with pyrite yellow; "bill black; feet brownish yellow or yellowish flesh-color; iris brown."

Adult female similar but rather duller. Immature male also similar, but the black areas of the head and neck duller, more brownish, and the superciliary and vertical stripes, and postauricular and subocular spots tinged with buffy, and less sharply defined.

Juvenal plumage: similar in general to that of the adult, but everywhere darker and duller, the upper parts, etc., dark citrine; head and neck brown, with the light markings warm buff; chin and upper throat dull white; lower throat, breast, and sides shaded with citrine; abdomen amber yellow, and under tail-coverts sulphine yellow.

MEASUREMENTS.

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Tarsus.
37939 ¹	♂	San Lorenzo	67	66	11.5	22
37991 ¹	♂	San Lorenzo (Type)	67	66	12.5	22
37992 ¹	♂im.	San Lorenzo	65	64	12.5	22
45285 ¹	♂	Paramo de Mamarongo	69	65	12.5	23
45286 ¹	♂	Paramo de Mamarongo	70	67	13	22.5
63207 ²	♂	Paramo de Mamarongo	69	69	12.5	24
45253 ¹	♀	Macotama	66	61	12.5	24
45276 ¹	♀	Paramo de Mamarongo	63	63	12	23

¹ Collection Carnegie Museum.

² Collection Academy of Natural Sciences of Philadelphia.



George V. S. Sutton, 1920

Hemispingus basilicus Todd, ♂
(Four-fifths natural size)

The discovery of a species of *Hemispingus* in the mountains of the Santa Marta region, to which apparently it is confined, is of more than passing interest. It is a very distinct form, differing from all the other known species of this group in having a broad vertical as well as superciliary stripe. *H. atropileus* (Lafresnaye) is perhaps its nearest relative.

The first birds of this species, including the type and an example in juvenal plumage, were taken on the very crest of the San Lorenzo, east of the Cerro Quemado, at about 8,600 feet, on July 18 and 28, 1911. Four birds in all were shot, which were the only ones seen at that point, in the thick shrubbery growing on the crest of the mountain. One female was taken at Macotama in the shrubbery along a small creek on April 6, 1914, and later four more individuals were secured at about 9,000 feet, along the edge of the timber-line above that point. It is evidently a rare bird, and one entirely overlooked by previous collectors in this region. In its faunal distribution it would appear to belong to the Temperate Zone.

414. *Geothlypis trichas trichas* (Linnæus).

One specimen: Paramo de Chiriqua.

A single individual was taken on April 21, 1914, on the shores of Lake Macotama, at an altitude of 15,000 feet, in a clump of low shrubbery growing out of a mass of great boulders, and was the only one seen. This astonishing record extends the range of the species to the South American continent, it not having been known heretofore to the southward of Chiriqui (Salvin and Godman, *Biologia Centrali-Americana*, Aves, I, 1881, 150), and being very rare even in Costa Rica (Cherrie, *Auk*, IX, 1892, 21). The late date of its occurrence, and the high altitude at which it was found, are no less remarkable. The specimen is an adult male bird, showing moult going on about the head.

415. *Seiurus noveboracensis noveboracensis* (Gmelin).

Seiurus noveboracensis SALVIN and GODMAN, *Ibis*, 1880, 117 (Minca).—BANGS, *Proc. Biol. Soc. Washington*, XIII, 1899, 105 (La Concepción and Chirua).—ALLEN, *Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 177 (Bonda and Cienaga).—ALLEN, *Auk*, XVII, 1900, 366 (Bonda and Cienaga; Salvin and Godman's and Bangs' records).—COOKE, *Bull. Biol. Survey*, No. 18, 1904, 102 (Santa Marta localities and references).

Siurus navius SHARPE, *Cat. Birds Brit. Mus.*, X, 1885, 652 (Minca).

Ten specimens: Bonda, Gaira, Mamatoco, Punto Caiman, and Dibulla.

Most of these are unquestionably true *noveboracensis*, but a few tend toward *notabilis*. The series sent in by Mr. Smith (including a few additional specimens, not referred to by Dr. Allen, from Mamatoco and Buritaca) all prove referable to the typical form upon comparison.

Both of the races of this species are regular winter visitants throughout the lowlands, and even into the highlands up to 4,000 feet, although rare above 1,000 feet. They are almost invariably solitary in their habits, and shy and difficult of approach. They occur here under the same conditions as in the north, being partial to small creeks, mud-puddles along the roads, etc. The earliest fall migration date recorded by Dr. Allen is September 8, 1898, and one was taken by the writer at Gaira as early as September 13, 1913. No specimens of this form happen to be on record later than March 17.

416. *Seiurus noveboracensis notabilis* Ridgway.

Seiurus noveboracensis notabilis BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 105 (Chirua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 177 (Bangs' reference).—ALLEN, Auk, XVII, 1900, 366, in text (Chirua, *ex* Bangs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 645 (Chirua, in range).—COOKE, Bull. Biol. Survey, No. 18, 1904, 105 (Chirua, *ex* Bangs).

Four specimens: La Tigrera, Don Diego, and Fundación.

After careful study of the series collected by Mr. Carriker it seems best to refer these four specimens, bearing dates respectively of April 30, 1913, January 20, 1914, and October 12 and 18, 1915, to *notabilis*, with authentic examples of which they agree in their darker upper parts and whiter, less yellowish under surface. The specimen from Chirua mentioned by Mr. Bangs as having been collected by Mr. Brown on February 1, 1899, and which has been examined in this connection, belongs here also. The occurrence of this race here raises an interesting question as to its migration range, which will be discussed more fully in another connection.

417. *Seiurus motacilla* (Vieillot).

Seiurus motacilla BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 177 (Bonda).—ALLEN, Auk, XVII, 1900, 366 (Bonda; "Santa Marta"; *ex* Bangs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 639 (Santa Marta re-

gion, in range).—COOKE, Bull. Biol. Survey, No. 18, 1904, 106 (Santa Marta localities and references).

Additional records: San Miguel, January (Brown).

One specimen: Don Diego.

There are only four records for this species in South America, all from the Santa Marta region. Two were taken by Mr. Brown (one near Santa Marta, the other at San Miguel); another at Bonda, November 8, 1898, by one of Mr. Smith's collectors; and a fourth example by the writer at Don Diego, January 31, 1914. From these records it will be seen how rare this species is in comparison with *S. noveboracensis*.

418. *Seiurus aurocapillus aurocapillus* (Linnæus).

Seiurus aurocapillus COOKE, Bull. Biol. Survey, No. 18, 1904, 99 (Bonda).

One specimen: Bonda.

This individual, secured by one of Mr. Smith's collectors on October 4, 1899, constitutes the only record for this region, and, in fact, the only South American record for the species, which ordinarily does not pass to the southward of Costa Rica during the winter months.

419. *Oporornis philadelphia* (Wilson).

Geothlypis philadelphia BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 105 (Chirua and La Concepción; plum.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 176 (Bangs' reference).—ALLEN, Auk, XVII, 1900, 366 (Chirua and La Concepción, *ex* Bangs).—COOKE, Bull. Biol. Survey, No. 18, 1904, 112 (Santa Marta localities and references).

Two specimens: Cincinnati and Dibulla.

The Mourning Warbler, as remarked by Cooke, is apparently partial to the highlands in its winter habitat. Mr. Brown took ten specimens at La Concepción and Chirua between February 12 and March 25, 1899. "Most of these birds are moulting, and the series covers practically the complete spring moult." The writer took one at Cincinnati on April 11, 1912 (a late migration date), in a small marshy tract of land on the mountainside, overgrown with wild cane and weeds. A second example was shot on the coast at Dibulla on February 22, in the long grass beside a lagoon. In this specimen the black throat and ashy head are being acquired by moult, which has been almost completed. This warbler is not a common bird, and its secretive habits render it more than usually inconspicuous.

420. *Oporornis agilis* (Wilson).

Geothlypis agilis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 177 (Bonda).
—ALLEN, Auk, XVII, 1900, 366 (Bonda).—COOKE, Bull. Biol. Survey, No. 18, 1904, 110 (Bonda, *ex* Allen).
Oporornis agilis RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 625 (Bonda, in range, *ex* Allen).—SHARPE, Hand-List Birds, V, 1909, 111 (Santa Marta [region], in range).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 46 (Bonda, *ex* Allen).

These references all pertain to a single occurrence, being the capture of an immature example at Bonda on October 22, 1898, by one of Mr. Smith's collectors. To the list of South American records enumerated by Cooke Mr. Hellmayr has added two more, from Brazil and Venezuela respectively. Being a bird of retiring habits, and not to be considered common under any circumstances, even during migration, it is not strange that it has escaped observation in its winter habitat. It is not yet clear whether it actually winters in this region or is merely a transient during migration.

421. *Oporornis formosus* (Wilson).

Geothlypis formosa BANGS, Proc. Biol. Soc. Washington, XII, 1898, 144 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 177 (Bonda).—ALLEN, Auk, XVII, 1900, 366 (Bonda; "Santa Marta," *ex* Bangs).—COOKE, Bull. Biol. Survey, No. 18, 1904, 108 (Santa Marta localities and references).
Oporornis formosa RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 622 (Santa Marta region, in range).

Five specimens: Bonda and Don Diego.

One of the rarer species, but, unlike *O. philadelphia*, it seems to be confined entirely to the lowlands. Mr. Smith's collectors secured no less than nine specimens at Bonda, the earliest taken on October 7. Mr. Brown got but one specimen on his entire trip. The single specimen taken at Don Diego by the writer was found on the shores of a lagoon in the forest on January 28, 1914. These appear to be the only South American winter records for the species.

422. *Dendroica striata* (Forster).

Dendroica striata ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 177 (Bonda).—ALLEN, Auk, XVII, 1900, 366 (Bonda).—COOKE, Bull. Biol. Survey, No. 18, 1904, 76 (Bonda, Mamatoco, and Cautilito; references).

Twelve specimens: Bonda, Cautilito, Mamatoco, Punto Caiman, Cincinnati, Dibulla, and Fundación.

Another winter resident species, of which Mr. Smith sent in a large series of specimens, collected between October 7 and November 22, indicating its relative abundance during that period. According to the experience of the writer, however, it is not so abundant as some of the other warblers, although found from sea-level up to 5,000 feet. As a rule it keeps high up in the tree-tops. Specimens were taken in September (September 29), October, and February 28, the example shot at the last date just commencing the prenuptial moult, a few new black feathers coming in.

423. *Dendroica castanea* (Wilson).

Dendroica castanea ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 177 (Bonda). ALLEN, Auk, XVII, 1900, 367 (Bonda).—COOKE, Bull. Biol. Survey, No. 18, 1904, 74 (Bonda, *ex* Allen).

Four specimens: Don Diego.

No. 44,579, Collection Carnegie Museum (January 29) and No. 63,500, Collection Academy of Natural Sciences of Philadelphia (taken on the same date) are in a very unusual plumage, not to be matched in an extensive series of breeding and migrant examples. The pileum and back are warbler green, broadly streaked with black, with the concealed bases of some of the crown-feathers chestnut. There is no chestnut below, except on the flanks, the breast being merely buffy, nor is there any sign of moult. This plumage appears to be that of the adult male in winter. No. 44,489 (January 20), however, is much worn, the back unstreaked, and has a few chestnut feathers on the crown. A female is dated February 5.

The four specimens taken were the only ones seen of this winter resident species. It keeps high up in the trees, and may be more abundant than it appears. October 27 was the date of Mr. Smith's only specimen.

424. *Dendroica fusca* (Müller).

Dendroica blackburnia ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 178 (Las Nubes and Valparaiso).—ALLEN, Auk, XVII, 1900, 367 (Las Nubes and Valparaiso).—COOKE, Bull. Biol. Survey, No. 18, 1904, 80 (Las Nubes and Valparaiso, *ex* Allen).

Six specimens: Las Nubes, Las Taguas, Cincinnati, Pueblo Viejo, and Chirua.

No. 41,700 (February 5) is undergoing prenuptial moult, assuming

the black and orange head-stripes. The March birds, however, have apparently fully completed this moult, being in fine fresh plumage.

Mr. Smith's collectors secured a few specimens of this brilliant warbler at Las Nubes (5,000 feet) in December, but it was not encountered by the writer except in February, March, and April. It was fairly common about the plantation at Cincinnati at this season, seeming there to prefer the shade-trees to the forest, although not rare in the latter between 3,000 and 5,000 feet. The winter range of the species is known to extend as far south as central Peru.

425. *Dendroica virens virens* (Gmelin).

One specimen: Cincinnati.

The winter range of this well-known warbler has not heretofore been known to extend south of Central America, and even in Panama and Costa Rica it is not common, according to Cooke (*Bulletin Biological Survey*, No. 18, 1904, 87). The capture of a single specimen at Cincinnati on April 12, 1912, is therefore of peculiar interest, constituting as it does the first South American record for the species. The specimen is a male in perfect spring plumage, and the date is one when the species has already appeared in North Carolina and Kentucky on its northward migration.

426. *Dendroica cærulescens cærulescens* (Gmelin).

Dendroica cærulescens ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 177 (Las Nubes).—ALLEN, Auk, XVII, 1900, 367 (Las Nubes).—COOKE, Bull. Biol. Survey, No. 18, 1904, 57 (Las Nubes, *ex* Allen).

The Greater Antilles constitute the regular winter range of this warbler, and its occurrence in the Santa Marta region can only be regarded as accidental. The only known instance of its occurrence here, and in fact the only known record for the South American continent, pertains to an adult male bird in the Smith collection, shot at Las Nubes, at an altitude of 5,000 feet, on December 16, 1898.

427. *Dendroica erithachorides erithachorides* Baird.

One specimen: Punto Caiman.

The single specimen secured was shot on the beach at Punto Caiman on September 27, 1913, in company with other warblers which were flitting about among the shrubbery and low trees. Its sex was not determined, but it appears to be an immature female, being white

below, with a faint tinge of buffy yellow. This is the first record for the Santa Marta region, although its occurrence here was to have been expected, since its range is known to include the Caribbean coast district of Colombia west of the mouth of the Magdalena River.

428. *Dendroica æstiva æstiva* (Gmelin).

Dendroica æstiva SALVIN and GODMAN, Ibis, 1880, 117 (Minca).—SHARPE, Cat. Birds Brit. Mus., X, 1885, 644 (Minca).

Dendroica æstiva BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 177 (Bonda).—ALLEN, Auk, XVII, 1900, 366 (Bonda).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 508 ("Santa Marta," in range).—COOKE, Bull. Biol. Survey, No. 18, 1904, 52 (Santa Marta localities and references).

Twenty-five specimens: Bonda, Mamatoco, Gaira, Punto Caiman, Rio Hacha, and Dibulla.

No. 41,782 (April 14) is a male in very high plumage, very heavily streaked below, and even with the crown and back streaked with orange chestnut. It is evidently a freak, as it cannot be matched in an extensive series.

A common winter resident throughout the whole of the lowlands and lower foothills, but rare above the coastal plain. It frequents shrubbery, open ground with scattering bushes, the low growth along the banks of streams and the sea-beach, etc.—the same kind of covert in general to which it is so partial in the breeding season. Most of the specimens secured were shot in September and April, the earliest date being September 11, the latest May 1. Mr. Smith's collectors, however, secured specimens as early in the fall as August 27. In addition to the specimens listed by Dr. Allen, as above, there are some sent in by Mr. Smith from Cienaga.

429. *Compsothlypis pitaiyumi elegans* Todd.

Parula pitaiyumi (not *Sylvia pitaiyumi* Vieillot) SALVIN and Godman, Ibis, 1880, 117 (Minca).—SHARPE, Cat. Birds Brit. Mus., X, 1885, 643 (Minca).

Compsothlypis pitaiyumi pacifica (not *Parula pitaiyumi pacifica* von Berlepsch) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta"), 180 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 178 (Onaca and Valparaiso).

Compsothlypis pitaiyumi elegans TODD, Ann. Carnegie Mus., VIII, 1912, 204 (Santa Marta region; crit.).

Additional records: La Concepción, San Miguel (Brown).

Twenty-four specimens: Bonda, Minca, Don Diego, Mamatoco, La Tigrera, Las Vegas, and Cincinnati.

With a much larger series of specimens than were available at the time this form was discriminated (ANNALS CARNEGIE MUSEUM, VIII, 1912, 204) its characters are fully confirmed. While there are of course occasional examples which are quite indistinguishable from typical *pitiayumi*, as claimed by Messrs. Hellmayr and von Seilern (*Archiv für Naturgeschichte*, LXXVIII, 1912, 46) the general differences are apparent at a glance when series are compared. Males are usually, although not always, more richly colored than females, but there seems to be little if any seasonal variation.

This dainty little warbler ranges from the lower edge of the foothills up to 4,000 feet or more, being rarely seen below 1,000 feet. Its favorite haunts are the forest, open woodland, and especially along the streams in the foothills. In its habits it is a true warbler, always keeping well up near the tops of the trees, for which reason it is easily overlooked, being rather a silent bird.

430. *Ateleodacnis bicolor* (Vieillot).

Dacnis plumbea ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 174 (Santa Marta region).

Fourteen specimens: Pueblo Viejo and Punto Caiman.

Slater's description of the female of this species (*Catalogue of the Birds in the British Museum*, XI, 1886, 26) really applies to the immature bird of both sexes, as shown by the present fine series, which includes specimens in both juvenal (paler and duller) and first winter (brighter yellow) dress. Adult females resemble the adult males, but are somewhat duller in general coloration.

Typical Cayenne skins are not available, but Bahia specimens in the collection of the American Museum of Natural History are absolutely indistinguishable from these and other Colombian birds.

One of the specimens sent in by Mr. Smith is labelled as coming from Pueblo Viejo, near the entrance to the Cienaga Grande. It has not been detected by the writer anywhere except in the mangroves along the shores of the Cienaga Grande at Punto Caiman. Although search was made for it at other points along the mangrove-lined shores of this body of water it was not found. It was one of the commonest birds among the mangroves at the aforesaid locality, and

more could easily have been secured had it not been for the hordes of mosquitoes encountered at every step. It was always in pairs or family groups, and usually in company with other birds.

431. *Ateleodacnis leucogenys* (Lafresnaye).

Nineteen specimens: Fundación, Tucurínca, and Valencia.

This is another of the additions to the Santa Marta list made by Mr. Carriker. The series differs from the description of *A. leucogenys* in certain particulars, being smaller, and having a white patch on the rump, and a decided white spot at the base of the primaries (in most specimens). With regard to the question of size, the following table of measurements will throw some light on the question. Only adult males have been included.

No.	Locality.	Wing.	Tail.	Tarsus.
42678 ¹	Fundación, Colombia	48.5	29	13.5
42867 ¹	Fundación, Colombia	49	31	14.5
42979 ¹	Fundación, Colombia	49	30	13.5
42997 ¹	Fundación, Colombia	50	30.5	13
49620 ¹	Fundación, Colombia	47	31	14
49715 ¹	Fundación, Colombia	49	32	13.5
49716 ¹	Fundación, Colombia	52	33	13.5
49419 ¹	Tucurínca, Colombia	48	31.5	13.5
5766 ²	"Colombia" (Type of species)	53.5	36	14
40393 ³	Bogotá, Colombia	54	34	15
40394 ³	Bogotá, Colombia	52	34	14
40391 ³	Bogotá, Colombia	53	35	13.5
122894 ³	Honda, Colombia	52	34	15
47731 ¹	Sierra de Carabobo, Venezuela	52	36	13
48082 ¹	Sierra de Carabobo, Venezuela	53	35	13.5
48530 ¹	Sierra de Carabobo, Venezuela	51	34.5	14

It appears, therefore, that while birds from the Santa Marta region average a little smaller, the difference is not so great as to justify formal subdivision of the species. The white patch on the lower rump (a character entirely overlooked by the original describer) appears in every male specimen of this bird examined, including Lafresnaye's type, kindly loaned by Mr. Bangs, although its size varies

¹ Collection Carnegie Museum.

² Lafresnaye Collection, in Museum of Comparative Zoölogy.

³ Collection American Museum of Natural History.

somewhat. The white spot at the base of the primaries is a more variable character, being large and conspicuous in some individuals, and entirely absent in others. Some examples have the blue of the upper parts very dark, or overspread with black. But none of these color-characters seem to be correlated with locality, and there are no valid grounds for attempting to subdivide the species.

Two females, apparently adult, are duller above than the males, with the crown colored the same as the back; below they are whitish, tinged with buffy yellowish, as also are the ear-coverts. No. 42,996 (August 18), marked as a *young* female, is pale yellowish (sulphur yellow) below, the throat and breast shaded with buffy, and the upper parts tinged with greenish.

A fairly abundant bird about Fundación, but not many were seen at Tucurín. The individuals secured were all taken in the lower reaches of the foothills, in the tangled woodland so characteristic of this section. It is always seen in pairs or family groups, and is not shy, being easily approached while climbing about the tips of the branches. Like the various species of *Diglossa*, it is fond of hunting among flowers, either for insects or for the blossoms themselves, it was not determined which. One was taken at Valencia, in the Rio Cesar Valley.

432. ***Conirostrum rufum*** Lafresnaye.

Conirostrum rufum SCLATER, Cat. Birds Brit. Mus., XI, 1886, 14 (Sierra Nevada de Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 105 (Paramo de Chiriqua and Paramo de Macotama).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 174 (Bangs' reference).

Four specimens: Paramo de Mamarongo and Paramo de Chiriqua.

An alticoline form, peculiar to the Andes of Colombia, whence it was described by Lafresnaye in 1843. It was traced northward to this region by Simons, who collected three specimens in the Sierra Nevada (exact locality not specified) at an altitude of 9,200 feet. Mr. Brown succeeded in securing five specimens, all shot at about 11,000 feet. It was met with by the writer in the same general region, along the edge of timber-line at about 9,000 feet, and also in the Macotama Valley at about 10,000 feet. It seems to be a rare bird, for not more than two more were seen besides the four secured. All were in low stunted trees, hopping about among the tips of the branches, rather sluggish in their movements, and not easily alarmed.

433. *Vermivora peregrina* (Wilson).

Helminthophaga peregrina SALVIN and GODMAN, Ibis, 1880, 117 (Minca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1880, 117 (Minca, in range). *Helminthophila peregrina* SHARPE, Cat. Birds Brit. Mus., X, 1885, 639 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 178 (Bonda, Onaca, Las Nubes, and Valparaiso).—ALLEN, Auk, XVII, 1900, 367 (Santa Marta region).—COOKE, Bull. Biol. Survey, No. 18, 1904, 42 (Santa Marta localities and references).

Additional records: La Concepción, Chirua (Brown).

Eight specimens: Bonda, Las Nubes, Valparaiso, Cincinnati, Di-bulla, Pueblo Viejo, and Fundación.

One of the commoner winter visitants, arriving in October (Fundación, October 14, 1915), and remaining until April (Valparaiso, April 4, 1899). It keeps to the highlands as a rule, but is occasionally seen in the lowlands, especially where there is forest, to which it is always partial.

434. *Vermivora pinus* (Linnæus).

Helminthophila pinus BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 105 (Chirua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 178 (Bangs' reference).—ALLEN, Auk, XVII, 1900, 367 (Chirua, *ex* Bangs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 455 (Chirua, in range).—COOKE, Bull. Biol. Survey, No. 18, 1904, 32 (Chirua, *ex* Bangs).

The only South American record for this species pertains to a specimen shot at Chirua by Mr. Brown on March 21, 1899. Ordinarily it does not appear to go much beyond Guatemala in the winter season so that the record can scarcely be regarded as being other than that of a straggler.

435. *Vermivora chrysoptera* (Linnæus).

Helminthophaga chrysoptera SALVIN and GODMAN, Ibis, 1880, 117 (Minca). *Helminthophila chrysoptera* SHARPE, Cat. Birds Brit. Mus., X, 1885, 639 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 160 (Pueblo Viejo).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 178 (Bonda and Las Nubes).—ALLEN, Auk, XVII, 1900, 367 (Bonda and Las Nubes; Minca, *ex* Salvin and Godman; Pueblo Viejo, *ex* Bangs).—COOKE, Bull. Biol. Survey, No. 18, 1904, 35 (Santa Marta localities and references).

Three specimens: Las Nubes and Chirua.

This appears to be a rare winter visitor, more partial to the forests of the highlands than to those of the coastal plain. It was recorded

by Simons from Minca, and by Mr. Brown from Pueblo Viejo, both these localities lying at an altitude of about 2,000 feet. Mr. Smith sent in a few specimens from Bonda and Las Nubes (5,000 feet), while it was taken by the writer at Chirua (3,500 feet), on March 10 and 11. The earliest fall date represented by a specimen is September 6, 1898. Mr. Brown's Pueblo Viejo specimen was shot March 20, 1898.

436. **Protonotaria citrea** (Boddaert).

Protonotaria citrea SCLATER, Cat. Am. Birds, 1861, 26 ("Santa Marta").—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1880, 111 ("Santa Marta," in range).—SHARPE, Cat. Birds Brit. Mus., X, 1885, 249 ("Santa Marta"), 641 (Valle de Upar).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 178 (Bonda).—ALLEN, Auk, XVII, 1900, 367 (Bonda; "Santa Marta," *ex* Bangs).—COOKE, Bull. Biol. Survey, No. 18, 1904, 22 (Santa Marta localities and references).

Nineteen specimens: Bonda, Gaira, Mamatoco, Punto Caiman, and Fundación.

One of the most abundant of the winter resident warblers within its local habitat, which is never far from the sea-beach or water of some kind. The earliest record is that by Sclater, quoted above, which refers to a specimen obtained from Verreaux. Mr. Brown secured no less than twenty-one specimens at some point not far from Santa Marta, and Mr. Smith also sent back a large series, including a few from Buritaca (September 19 and 21), a locality not quoted for this species in Dr. Allen's paper. The writer saw quite a number at Don Diego in January, and it was common in October at Fundación also. On the beach at Punto Caiman it was the most abundant bird. The earliest migration date in the fall is September 11, 1913, when a number of specimens were taken at Gaira. That it is not absolutely confined to the coast region, however, but occasionally follows up some of the inland streams, is indicated by a specimen secured at Valle de Upar by Simons on September 25. As on its breeding grounds, it keeps close to the ground in bushes and shrubbery, and is never seen in any abundance far from water.

437. **Mniotilta varia** (Linnæus).

Mniotilta varia SALVIN and GODMAN, Ibis, 1880, 117 (Minca).—SHARPE, Cat. Birds Brit. Mus. X, 1885, 641 (Minca).—BANGS, Proc. Biol. Soc. Washing-

ton, XII, 1898, 143 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 178 (Bonda, Las Nubes, and Onaca).—ALLEN, Auk, XVII, 1900, 367 (Bonda, Onaca, and Minca).—COOKE, Bull. Biol. Survey, No. 18, 1904, 18 (Santa Marta localities and references).

Additional records: La Concepción (Brown).

Eleven specimens: Las Nubes, Cincinnati, Dibulla, Don Diego, Pueblo Viejo, and Chirua.

A common winter resident wherever there is forest, ranging from sea-level up to 5,000 feet, but most numerous between 1,000 and 4,000 feet. It was recorded by Mr. Smith at the remarkably early date of August 21. The latest spring date on which specimens were secured by the writer was March 12, at which time the birds were already in perfect spring plumage. It seems to be rather solitary in its habits, and Simons, who secured specimens at Minca, mentions that it is "found amongst high trees."

Family CÆREBIDÆ. HONEY-CREEPERS.

438. *Cæreba luteola luteola* (Cabanis).

Certhiola luteola SALVIN and GODMAN, Ibis, 1880, 119 (Santa Marta; habits).

SCLATER, Cat. Birds Brit. Mus., XI, 1886, 40 (Santa Marta and Valle de Upar).

Cæreba luteola BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 173 (Cacagualito, Santa Marta, and Cienaga).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 406 ("Santa Marta"; meas.).—LOWE, Ibis, 1907, 565 (Santa Marta; crit.).

Additional records: La Concepción, Chirua (Brown); Tucurinca (Carriker).

Thirty-one specimens: Santa Marta, Cacagualito, Bonda, Mamatoco, Las Vegas, Fundación, Punto Caiman, Don Diego, and Rio Hacha.

As in other species of this genus, in juvenal dress the throat and superciliaries are yellow-tinged, as shown by several birds collected in May and June. In the next stage of plumage the upper parts are much browner. The series shows much variation in the depth of the yellow below, and in the size of the white wing-spot. Compared with a good series from Trinidad and northern Venezuela, no differences are observable when specimens of the same sex and condition of plumage are viewed side by side, and there certainly exists no reason whatever for regarding them as representing distinct forms, as claimed

by Dr. Lowe. Messrs. Hellmayr and von Seilern's remarks on this point (*Archiv für Naturgeschichte*, LXXVIII, 1912, 52) are fully confirmed by the series in the collection of the Carnegie Museum, although the writer agrees with Dr. Lowe that *C. chloropyga* and *C. luteola* should be regarded as distinct species. *C. cerinoclunis* Bangs should almost certainly stand as a subspecies of the latter. A dark, richly colored race from the mountains of Venezuela has been described by Dr. Lowe under the name *C. luteola montana* (*Ibis*, 1912, 509), of which the later *C. luteola obscura* Cory (*Field Museum Ornithological Series*, I, 1913, 291) appears to be a synonym. In view of the variation observable in typical *luteola* further examination of the form in question is naturally desirable.

Simons met with this little bird in the immediate vicinity of Santa Marta, saying that it was "found amongst bushes and dry twigs of dead trees; very lively in its movements." Mr. Smith sent in a few specimens labelled "Santa Marta," as also did Mr. Brown; the birds so labelled by the latter collector, however, doubtless came from the vicinity of Bonda, as elsewhere explained. Oddly enough, the writer has never seen this bird around Santa Marta itself, or even along the road from that place to Cincinnati. At Fundación and Tucurínca it is fairly common, also at Don Diego, and along the shores of the Ciénaga Grande. Strangest of all, it is not rare at Las Vegas, and has even been recorded from two points in the Sierra Nevada proper. While the usual habitat of this species appears to be the lowlands of the Tropical Zone up to about 1,000 feet, it was present at Las Vegas up to at least 4,500 feet along the edge of the forest. It is found in all sorts of cover, low and high, and has a faint, rasping, song-like note, easily recognized.

439. *Dacnis cœrebicolor napæa* Bangs.

Dacnis napæa BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta"; orig. descr.; type now in Mus. Comp. Zool.; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 174 (Bonda and Cacagualito).—SHARPE, Hand-List Birds, V, 1909, 349 (ref. orig. descr.; range).—BRA-BOURNE and CHUBB, Birds S. Am., I, 1912, 396 (ref. orig. descr.; range).

Dacnis cœrebicolor var. *napæa* DUBOIS, Syn. Avium, I, 1901, 688 ("Santa Marta," in range; ref. orig. descr.).

Dacnis cayana napæa HELLMAYR, Proc. Zool. Soc. London, 1911, 1095, in text ("Santa Marta"; range; crit.).

Sixteen specimens: Fundación, Tucurínca, Mamátoco, La Tigrera, Trojas de Cataca, and Don Diego.

The six forms of *Dacnis cayana* listed by Mr. Hellmayr (together with *D. c. paraguayensis*—not seen by the writer) fall naturally into two groups, characterized by a difference in color. The first group, composed of *cayana*, *glaucogularis*, and *callaina*, are decidedly more greenish (nearest beryl green) in general coloration, so far as the males are concerned, while in the second group, comprising *ultramarina*, *napæa*, and *carebicolor*, the color varies from light cerulean blue to phenyl blue. Of these *ultramarina* is the most variable, but is nevertheless easily referable to this group. Females differ in a corresponding manner, those of the first group having the pileum and sides of the head much duller, paler, and more greenish blue than those of the second group. It is fair to presume that these two groups represent two specific types; at least, this would seem to be a more logical arrangement than to consider such dissimilar forms as *cayana* and *carebicolor* to be conspecific. The only objection to such a course arises from the circumstance that the range of the first group would thus be rendered discontinuous, since *callaina*, from Chiriqui and southwestern Costa Rica, is isolated from its nearest allies by the interposition of a form belonging to the other group. Such a distribution need not militate against the proposition here advanced, however, in view of other similar cases which have long been recognized, as for instance that of *Thamnophilus doliatus* and *T. radiatus*, which has certain points in common with the present case.

Dacnis carebicolor napæa, as the present bird must be called if the above considerations are granted, is clearly an intermediate form between *D. c. ultramarina* of Panama, eastern Costa Rica, etc., and *D. c. carebicolor* of the Bogotá region of Colombia, as already indicated by Mr. Hellmayr, examples from western Colombia being intergrades between *carebicolor* and *napæa*. Indeed, considerable variation in the shade of blue is shown by the present series, although none compare favorably with *carebicolor*. Two females from Don Diego, on the north coast, differ from all the other birds of that sex from various localities in the Magdalena basin in having the pileum paler, more greenish blue—a fact which may or may not be significant.

This species is mainly a bird of the Lower Tropical Zone, ranging over the whole of the lowland belt from Fundación to Dibulla, as well

as into the lower foothills, up to perhaps 1,500 feet, but is a rare bird wherever found. It is usually seen in pairs or small flocks, often in company with the species of *Cyanerpes* or other small arboreal kinds, frequenting the tops of low trees and shrubbery.

440. *Cyanerpes cæruleus cæruleus* (Linnæus).

Careba cærulea SALVIN and GODMAN, Ibis, 1880, 119 (Minca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 33 (Minca).

Arbelorhina cærulea microrhyncha (not *Careba cærulea microrhyncha* von Berlepsch) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta").

Cyanerpes cæruleus microrhynchus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 173 (Bonda, Minca, Onaca, Las Nubes, and Cacagualito).

Fourteen specimens: Bonda, Agua Dulce, Las Vegas, Don Diego, and Pueblo Viejo.

Only four adult males are included, which are not distinguishable in any way from a good series from French Guiana, assumed to represent true *cæruleus* (described from Surinam). Reference of the Santa Marta bird to *microrhynchus* (a pale race described from Bucaramanga, Colombia), is apparently not justified. There are two males, dated January 24 and February 2, in the midst of the first prenuptial moult, and another taken at the latter date in which this moult is just beginning. Adult females apparently have a pale blue mystacial stripe.

Although the writer has always been on the lookout for this bird, he has never met with it on the west or south slopes of the San Lorenzo, but only on the northeast slopes and foothills, and along the humid coast belt to the east of Santa Marta. Its range is from sea-level up to 4,000 feet (at Las Vegas), and consequently takes in most of the Tropical Zone in this region. It is usually seen in small flocks—probably family groups, since immature individuals are nearly always present. The birds keep well up in the high trees as a rule, for which reason they are hard to secure, although fairly common. In their manner of climbing about among the branches they much resemble vireos, but nearly always seem to feed in flower-bearing trees.

441. *Cyanerpes cyaneus* (Linnæus).

(?) *Careba gularis* (not *Certhia gularis* Sparrmann) BONAPARTE, Compt. Rend., XXXVIII, 1854, 258, footnote ("Santa Marta").

Careba cyanea SALVIN and GODMAN, Ibis, 1879, 199 (Manaure); 1880, 119 (Minca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 32 (Manaure and Minca).

Arbelorhina cyanea eximia BANGS, Proc. Biol. Soc. Washington, XII, 1898, 143 ("Santa Marta").

Cyanerpes cyanea eximea (sic) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 173 (Bonda, Cacagualito, and Minca).

Cyanerpes cyaneus eximia (sic) CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIV, 1915, 656, in text (Bonda; meas.).

Cyanerpes cyaneus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 386 ("Santa Marta"; meas.; crit.).

Additional records: Tucurinca (Carriker).

Thirty-nine specimens: Bonda, Cacagualito, Minca, Mamatoco, La Tigrera, Las Vegas, and Don Diego.

These are inseparable from Venezuelan specimens coming from near the type-locality of *eximius*, having the same long bills. In color they are precisely the same as Central American skins; in fact, the latter can be distinguished only by having shorter bills on an average, but numerous examples are quite alike in this respect also, and with the range of individual variation thus so great it is a grave question whether it is profitable to recognize either *eximius* or *carneipes* as distinct races. Certainly neither can be distinguished by the color of the females, as claimed by Dr. Oberholser (*Auk*, XVI, 1899, 13), for, as shown by the present series, this is a variable feature in birds from all regions. Moreover, a series from French Guiana, which may, we think, be considered fairly typical of *cyaneus*, are not certainly distinguishable from the Colombian and Venezuelan birds.

This gorgeous little bird is found from sea-level up to 3,500 feet on all sides of the mountains, although it is more numerous below 2,500 feet, preferring as it does the region of the Lower Tropical Zone. It was very common, for instance, at Minca and Don Diego, favoring the more open "dry forest," especially where tracts of savanna were found. It goes about in pairs or flocks, often ten to twenty birds together, which are quite tame, and not easily frightened away, although when they do go they often fly a long distance. Like its cousin, *C. cæruleus cæruleus*, it has the habit of frequenting trees in blossom or those bearing small berry-like fruits. There is one species of tree, confined to the savannas, which bears a small fruit filled with red seeds, of which these birds are inordinately fond, gorging themselves to the point of sluggishness. The writer has never been able to locate a nest of either species of this genus.

442. *Diglossa nocticolor* Bangs.

Diglossa aterrima (not of Lafresnaye) SALVIN and GODMAN, Ibis, 1880, 119 (Sierra Nevada de Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 8 (Sierra Nevada de Santa Marta).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 174 (Salvin and Godman's reference; crit.).

Diglossa nocticolor BANGS, Proc. Biol. Soc. Washington, XII, 1898, 180 (Macotama; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 174 (El Libano).—DUBOIS, Syn. Avium, I, 1901, 686 (Macotama, in range; ref. orig. descr.).—SHARPE, Hand-List Birds, V, 1909, 346 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 393 (ref. orig. descr.; range).

Additional records: Paramo de Macotama (Brown).

Thirty-four specimens: San Lorenzo, Sierra Nevada de Santa Marta (6,000 feet), San Miguel, Cerrò de Caracas, Macotama, Paramo de Mamarongo, Paramo de Chiruqua, and Heights of Chirua.

Four specimens of a black *Diglossa* collected by Simons in the Sierra Nevada, at from 10,000 to 11,000 feet, were referred by Salvin and Godman, and later by Sclater, to *D. aterrima* Lafresnaye, a species which is described as being wholly black. A small series procured by Mr. Brown from Macotama proved to differ from the description in having the rump and upper tail-coverts slaty gray, and were accordingly described as a distinct species by Mr. Bangs. Dr. Allen retained *aterrima* on his list on the ground that if Salvin and Godman's specimens "had been what Mr. Bangs has since described as *D. nocticolor* they could not have been referred by these authors to *D. aterrima*." The distinguishing character of *D. nocticolor*, however, is one that might readily be overlooked in a skin, the gray area being entirely concealed when the wings are in place; moreover, it is exceedingly unlikely that two forms so closely allied would be found together. The question of the relationship of these two forms can not be discussed further for lack of the necessary material. The series indicates that females of the present form average a trifle duller black and less glossy than males.

On the open stretches of the summit of the San Lorenzo this is a characteristic and not uncommon bird, seeming to prefer the bushes and shrubbery out in the open to the edge of the forest, to which *D. albilateralis* is so partial. In the Sierra Nevada, too, it is abundant wherever conditions are suitable, being found as low down as 5,000 feet, although more abundant higher up, and ranging as high as 11,000

feet. They are active, nervous birds, flitting about almost constantly, except when feeding on a flower. Their food seems to consist chiefly of flowers and the insects which are found there. Indeed, the writer has seen them actually eating the petals of certain blossoms.

443. *Diglossa albilateralis* Lafresnaye.

Diglossa albilateralis SALVIN and GODMAN, Ibis, 1880, 119 (San Sebastian).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 9 (San Sebastian).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 179 (San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 80 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 174 (El Libano and Las Nubes).

Additional records: La Concepción, Paramo de Macotama (Brown).

Thirty-four specimens: San Miguel, Cerro de Caracas, San Lorenzo, Taquina, Sierra Nevada de Santa Marta (6,000 and 8,000 feet), and Heights of Chirua.

Several males of the above series are in first nuptial plumage, readily told by the duller, browner, and more worn remiges and their coverts. Females taken in March and April are much richer brown than those shot later in the season. The series as a whole is indistinguishable from another from Venezuela.

A fairly common bird on the San Lorenzo above 7,000 feet, but most in evidence along the upper edge of the woodland around the Cerro Quemado. It was also common in the Sierra Nevada from 5,000 up to 9,000 feet, always in shrubbery, isolated trees, or along the edge of the forest. It is usually seen in pairs, and is rather shy, making long flights when alarmed. Simons encountered it at San Sebastian, and Mr. Brown secured specimens here also, as well as at San Miguel, La Concepción, Paramo de Macotama, and El Mamon. It appears to be a bird of the Subtropical Zone, here as elsewhere throughout its range.

444. *Diglossa sittoides similis* Lafresnaye.

Diglossa sp. SALVIN and GODMAN, Ibis, 1880, 119 (San Sebastian).

Diglossa sittoides (not *Serrirostrum sittoides* D'Orbigny and Lafresnaye)

SCLATER, Cat. Birds Brit. Mus., XI, 1886, 4 (San Sebastian).

Diglossa sittoides similis BANGS, Proc. Biol. Soc. Washington, XII, 1898, 179 (San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 80 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 174 (Bangs' references).

Additional records: Santa Cruz (Brown).

One specimen: Pueblo Viejo.

A series from this region placed at our disposal by Mr. Bangs agree exactly with specimens from Venezuela and the Eastern Andes of Colombia. The subspecific status of the northern form is indorsed by Dr. Chapman (*Bulletin American Museum of Natural History*, XXVI, 1917, 579).

This bird would seem to be more abundant on the south slope of the Sierra Nevada than on the north, having been recorded from San Sebastian by both Simons and Mr. Brown. The latter collector also took specimens at El Mamon, Santa Cruz, and San Miguel. In all the writer's collecting he took only one specimen, in some second-growth shrubbery near the village of Pueblo Viejo (2,000 feet), and this was probably merely a straggler, since the species is essentially a bird of the Subtropical Zone, and favors higher altitudes.

Family ICTERIDÆ. TROUPIALS.

445. *Dolichonyx oryzivorus* (Linnæus).

Dolichonyx oryzivorus SCLATER, Proc. Zool. Soc. London, 1858, 72 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1861, 134 ("Santa Marta").—SCLATER, Ibis, 1884, 2 ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 331 ("Santa Marta").—CHAPMAN, Auk, VII, 1890, 39, 42 ("Santa Marta," ex Sclater).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 163 (Cienaga and Bonda).—ALLEN, Auk, XVII, 1900, 365 (Cienaga and Bonda).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 276 (Bonda and Buritaca).

Twelve specimens: Buritaca, Gaira, Mamatoco, Punto Caiman, and Fundación.

A common visitor in September and October in the lowlands, from Santa Marta around to Fundación and all along the shores of the Cienaga Grande. It was very numerous on the beach at Punto Caiman, and along the shore at Trojas de Cataca. The earliest date represented by a specimen is September 11, and the latest October 14. The series comprises adult and immature birds of both sexes.

446. *Sturnella magna paralius* Bangs.

Sturnella ludoviciana (not *Sturnus ludovicianus* Linnæus) SALVIN and GODMAN, Ibis, 1879, 201 (San Sebastian).

Sturnella ludoviciana meridionalis (not of Sclater, 1861) SCLATER, Ibis, 1884, 26 (Sierra Nevada de Santa Marta, in range).

Sturnella magna subsp. *meridionalis* SCLATER, Cat. Birds Brit. Mus., XI, 1886, 360 (San Sebastian).

Sturnella meridionalis BANGS, Proc. New England Zool. Club, I, 1899, 79

(San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 163 (Salvin and Godman's and Bangs' references).

Sturnella magna paralius BANGS, Proc. New England Zool. Club, II, 1901, 56 (San Sebastian [type-locality] and El Mamon; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—DUBOIS, Syn. Avium, II, 1903, 1106 (San Sebastian, in range; ref. orig. descr.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 70 ("Santa Marta"; ref. orig. descr.; crit.).

Sturnella paralius BRABOURNE and CHUBB, Birds S. Am., I, 1912, 437 (ref. orig. descr.; range).

One specimen: Camperucho.

Simons took a single specimen of this bird at San Sebastian, at an altitude of 6,700 feet, on April 5, 1878. This was referred to *Sturnella "ludoviciana"* by Salvin and Godman at the time, but a few years later Sclater quoted the record under his *Sturnella ludoviciana meridionalis*. Mr. Brown met with the species at the same locality, San Sebastian, and also at El Mamon, securing six specimens in all, which Mr. Bangs provisionally referred at first to *meridionalis*, but later described as a new form, *paralius*. Mr. Carriker did not visit the south side of the Sierra Nevada, to which in this region the bird in question is apparently confined, until August, 1920, when he discovered it in some numbers on the savannas near Camperucho, securing one example. The type-series, examined by the writer in this connection, are also in fresh plumage (July and August), and compare favorably with a series from Aguachica, Colombia, collected at about the same time of year. The name *paralius* has recently been extended to cover the bird of the coast region of Venezuela by Messrs. Hellmayr and von Seilern—a procedure which we are disposed to indorse. *S. m. paralius* may be distinguished from *S. m. meridionalis* of the Bogotá region of Colombia by its smaller size, shorter, relatively stouter bill, and the rather paler, more rufescent coloration of the upper parts, with the black bars on the tertiaries and rectrices narrower. The last mentioned character, as well as the generally more rufescent tone of the upper parts, will also serve to distinguish it from Panama specimens (*S. m. inexpectata?*), which it resembles in small size.

447. *Leistes militaris* (Linnæus).

Two specimens: Fundación.

While none of the examples from Venezuela and Colombia are quite up to the measurements quoted by Mr. Bangs (*Proceedings Biological Society of Washington*, XXIV, 1911, 190) for specimens from the Lower Amazon Valley, several approach the latter quite closely in this respect, and a subdivision of the species on such a basis does not seem to us advisable. Care must be used in comparing specimens, as the species is one which is greatly affected by wear.

During the writer's last day's shooting at Fundación two males of this handsome species were met with, both of which were secured. They were together and apparently alone, no others being seen before or after. The species is well known to have a wide distribution in South America, but this is the first record for the Santa Marta region.

448. *Agelaius icterocephalus icterocephalus* (Linnæus).

Thirty-three specimens: Fundación and Dibulla.

These have nothing to do with the large form described by Dr. Chapman from the Bogotá region of Colombia, with which they have been directly compared, but it is by no means certain that they belong to the typical form from Cayenne. Unfortunately no adequate series from the latter locality is yet available, but the few adult females from British Guiana studied are somewhat different from the Fundación and Dibulla skins of that sex. The latter are more brightly colored, and the yellow of the throat is extended over the breast and upper abdomen, growing paler and less "solid" posteriorly; the lower abdomen, under tail-coverts, and tibiae are much paler gray by comparison, and are more or less tinged with yellowish olive. The auriculars are mostly bright yellow like the throat, leaving only a narrow postorbital streak of dusky greenish above them. There is also more yellowish olive suffusion and feather-edging on the upper parts, remiges, and rectrices. While all the specimens are in more worn plumage (August) than the available examples from farther east, it seems scarcely possible that season would account for all these characters. However, February specimens from Lorica, Bolivar, Colombia, fail to show these characters, while a bird in fresh plumage (February 13) from La Pedrita, Rio Uracoa, Venezuela (No. 58,666, Collection Academy of Natural Sciences of Philadelphia), a locality close to the Guiana

frontier, is exactly like the Fundación and Dibulla skins, so that until a good series from Cayenne has been studied it would be unsafe to make any further subdivision of the species.

The sequence of plumages in this species appears to correspond with that in *A. phaniceus*, except that the adult male has no distinctive winter dress. In juvenal dress both sexes resemble the adult female, but the yellow color is duller and more buffy, and suffuses the entire plumage. At the postjuvenal moult the male assumes the black and yellow dress, but the remiges are dull and brown, and the feathers of the lower parts are veiled with greenish yellow. Not until the first postnuptial moult is the fully adult plumage gained.

An abundant bird in the marshes at Fundación, although rare at Dibulla, where conditions are not so favorable. A small flock was noted in a marsh along the river, several miles inland from Rio Hacha, in July, 1920. In its general habits it is similar to the North American species of the genus, and the nest is similar also, being slung between the stalks of coarse grasses, weeds, or "wild platinos." Two eggs are laid, of the usual pale blue color, with pitchy and lilac dots, speckles, and scrawls.

449. *Icterus galbula* (Linnæus).

Icterus baltimore SALVIN and GODMAN, Ibis, 1880, 123 (Minca).—SCLATER, Ibis, 1883, 354 ("Sierra Nevada de Santa Marta," in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 364 (Minca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves; I, 1887, 460 ("Santa Marta").

Icterus galbula BANGS, Proc. Biol. Soc. Washington, XII, 1898, 139 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 162 (Salvin and Godman's and Bangs' references).—ALLEN, Auk, XVII, 1900, 365 (Minca, *ex* Salvin and Godman, and "Santa Marta," *ex* Bangs).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 310 (Santa Marta region, in range; references).

One specimen: Don Diego.

The Baltimore Oriole reaches its extreme winter limit in this region, where it appears to be quite rare. Simons secured a specimen at Minca on February 12, 1879, and a second individual was shot by Mr. Brown in the same general region. The writer took a single highly plumaged male at Don Diego on January 26, 1914, in the forest at the base of the foothills. No others were seen there or elsewhere.

450. *Icterus mesomelas carrikeri* Todd.

Icterus mesomelas (not *Psarocolius mesomelas* Wagler) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 162 (Cacagualito).

Icterus mesomelas carrikeri TODD, Proc. Biol. Soc. Washington, XXX, 1917, 4 (Fundación; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, VI, 1917, 146 (reprint orig. descr.).

Five specimens: Fundación.

The type of Cassin's *Icterus salvinii* is a Costa Rican specimen, agreeing with a series from that country in the collection of the Carnegie Museum. From these all the Colombian specimens examined (including, besides the above, five skins from Jaraquiel, in the Department of Bolivar, and one each from "Bogotá" and the Rio Atrato) differ at a glance in their evidently smaller size (the bill especially), brighter, more orange general coloration, and more restricted black throat-patch. In all these respects they resemble *Icterus mesomelas taczanowskii* Ridgway, a series of which (including the type) has been examined in this connection, but differ therefrom in having the white edgings to the secondaries very narrow or wanting, precisely as in *I. m. salvinii*. This difference is clearly not seasonal, because the respective series compared were secured at the same time of year (September and November), and if *mesomelas* and *salvinii* can be separated on this basis, so also can *taczanowskii* and the present form. Mr. Ridgway (*Bulletin U. S. National Museum*, No. 50, II, 1902, 307, footnote) refers to the peculiarities of birds from central Colombia, intimating that they may be intergrades between *salvinii* and *taczanowskii*. His measurements show that Panama birds (males at least) average somewhat smaller than those from Nicaragua and Costa Rica, and it is of course possible that they too may belong to the form under discussion.

MEASUREMENTS.

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Tarsus.
49598	♂	Fundación	95	102	21	28.5
49711	♂	Fundación (Type)	95	102	21	30
49747	♂	Fundación	92	102	21	29
49748	♂	Fundación	91	108	22	30
52801	♂	Jaraquiel	96	105	22	31
52872	♂	Jaraquiel	99	108	23	28
52873	♂im.	Jaraquiel	92	102	21	29
49599	♀	Fundación	92	100	22	28
52802	♀	Jaraquiel	90	103	22	29
52871	♀im.	Jaraquiel	90	99	22	27

The four races of this species here recognized may be diagnosed as follows:

- a. General coloration more yellowish; black throat-patch more extended.
 - b. Smaller; secondaries with decided white edgings. (Mexico to Honduras.) *Icterus mesomelas mesomelas.*
 - b'. Larger; secondaries without white edgings. (Nicaragua to Panama.) *Icterus mesomelas salvinii.*
- a'. General coloration more orange; black throat-patch more restricted.
 - b. Secondaries with white edgings very narrow or wanting. (Colombia and Venezuela.) *Icterus mesomelas carrikeri.*
 - b'. Secondaries with conspicuous white edgings. (Western Ecuador and Peru.) *Icterus mesomelas taczanowskii.*

Mr. Smith sent in one specimen of this bird from Cacagualito, and the writer searched for it at all localities visited, and was almost on the point of giving up getting it, when it was finally discovered on the last trip to Fundación. First a pair were taken in a few trees near the shore of the marsh, and later four more were shot, also in the vicinity of the marshes. The Magdalena basin is evidently its center of abundance in this region, and the individual taken at Cacagualito was probably a rare straggler on that side.

451. *Icterus nigrogularis nigrogularis* (Hahn)⁴⁰.

Icterus xanthornus (not *Coracias xanthornus* Linnaeus) LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., IX, 1869, 272, in text ("Santa Marta").—WYATT, Ibis, 1871, 329 (Santa Marta).—SALVIN and GODMAN, Ibis, 1880, 123 (Santa Marta; habits).—SCLATER, Ibis, 1883, 368 (Santa Marta, in range).—RIDGWAY, Proc. U. S. Nat. Mus., VII, 1884, 174, in text ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 380 (Santa Marta).—RICHMOND, Proc. U. S. Nat. Mus., XVIII, 1896, 675 ("Santa Marta"; meas.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 162 (Santa Marta and Bonda); XXI, 1905, 290 (Bonda; descr. nest and eggs).

Icterus xanthornus xanthornus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 300 (Santa Marta; crit.; references).

Sixteen specimens: Santa Marta, Bonda, Mamatoco, Punto Caiman, Fundación, and La Tigrera.

No characters exist for separating the Colombian birds from more eastern examples of the species, as suggested by Mr. Ridgway. The examination of a large series from various parts of its range shows

⁴⁰ Cf. Hellmayr, *Verhandlungen der Ornithologischen Gesellschaft in Bayern* XIV, 1919, 132.

that there is much variation in the amount of white on the remiges and their coverts, even independently of season and wear. Moreover, this white is very evanescent, and soon wears away. There is much variation in general color also, some individuals being brilliant orange, and others much less intense. Two females from Fundación (October 11 and 20) show the completion of the postjuvenile moult, the black throat-feathers just coming in, while a young male from Punto Caiman (October 2) is not so far advanced.

Wyatt recorded this well-known species from the immediate vicinity of Santa Marta in 1871, and later Simons met with it in the same locality. The latter collector says that it is, "after the 'Trupial,' the greatest favourite here, and the best songster, piping every tune taught it. It prefers the hot valleys, among cacti and acacia, to the cool forests." It is strictly a bird of the littoral Tropical Zone, being abundant in the semi-arid coast belt, and extending around into the valley of the Rio Rancheria, but not seen above 1,000 feet. Although present throughout the lowlands, it is not so abundant in the more humid portions. It frequents cultivated lands, open scrub-growth, and the borders of streams. The nest is often built in a cocoanut palm, hung from the long pendant leaves. Mr. Smith sent in no less than seventeen nests, collected in the months of April and May, six of which contained two eggs each, and ten three each, while one had five—an exceptional number. Dr. Allen says that "these nests are of the usual pendant, *Icterus* style, with the entrance at the top, but they vary considerably in length and in the character of the materials used in their construction. They are composed principally of grass, but vary in color, being dull grayish brown, yellowish brown, or even bright reddish brown, according to the kind of grass selected. One differs from all the others in being composed of a much finer and more wiry kind of grass than the others. They are all very compactly woven, the walls gradually thickening from the top to the bottom, the bottom being from one-half to three-fourths of an inch thick, within which is a circularly woven thick lining of softer material than the walls, forming a sort of second nest at the bottom of the pouch. The nests vary in length from about 10 to 16 inches, with a diameter at the bottom of about $4\frac{1}{2}$ inches.

"The eggs are white, sometimes bluish white, scrawled with lines of purplish black, and sometimes with lavender, chiefly about the greater

end, the amount of marking varying greatly in different sets, and even in different eggs of the same set."

452. *Icterus auricapillus* Cassin.

Icterus auricapillus SÁLVIN and GODMAN, Ibis, 1880, 123 (Santa Marta).—SCLATER, Ibis, 1883, 363 (Santa Marta, in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 377 (Santa Marta and Sierra Nevada de Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 139 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 162 (Bonda and Cacagualito). *Xanthornus auricapillus* VON BERLEPSCH and HARTERT, Nov. Zoöl., IX, 1902, 31 (Santa Marta proposed as type-locality).

Twenty-eight specimens: Bonda, Cacagualito, Mamatoco, Fundación, Dibulla, Don Diego, and Santa Marta.

This species is a near relative of *Icterus cucullatus*, from which it differs conspicuously in lacking any white markings on the wings and tail, and in having the lesser wing-coverts yellow. Its characters seem to be very constant throughout its range, which includes the greater part of Venezuela and Colombia. In juvenal dress, illustrated by four specimens taken at dates varying from February 21 and May 12 to August 12, the species is pale yellow (baryta yellow) below, the throat and sides of the head brighter (empire yellow to lemon chrome), the lower throat usually more or less veiled with dusky olive, the back and tail dull olive or buffy olive, the pileum and nape brighter, nearer citrine, and the wings dusky, with paler edgings and narrow yellowish white tips to the greater coverts.

A species which is found only in the lowlands, as a rule below 1,000 feet. It is rather rare in the semi-arid district, but is commoner at Don Diego, Dibulla, and Fundación. It frequents cultivated or open lands, or the trees along streams.

Mr. Smith sent in three sets of eggs assigned to this species, of three each, labelled respectively Mamatoco, April 21; Bonda, May 23; and Jordan, June 4. They are not distinguishable from those of *I. nigrogularis*. The nest is of the usual *Icterus* type, and is attached to the divided ends of a palm leaf, which continue beyond and partly conceal it. It is composed entirely of one kind of palm fiber, giving a very uniform appearance to the structure, with a few loose ends hanging down, like drapery.

453. *Icterus spurius* (Linnæus).

Two specimens: Dibulla and Fundación.

The Orchard Oriole is evidently a rare winter visitor in this region. The first specimen was a female, shot at Dibulla on February 25, 1914, and showing moult in progress on the crown and throat. A fine male was taken at Fundación on October 15, 1915. This is a very interesting specimen, showing the completion of the postnuptial moult in the adult bird. The rectrices are about two-thirds grown, and the wings retain only the two outermost primaries of the old dress. Below the bird is exactly like spring specimens, but above it is very different, the hind crown, back of the neck, and back being heavily overspread with buffy brown feather-tips, almost concealing the black color underneath; the secondaries are broadly edged externally with rusty chestnut, passing into buffy grayish terminally; and the rectrices are also slightly tipped with buffy grayish.

454. *Icterus icterus ridgwayi* Hartert.

Icterus vulgaris (not of Daudin) SALVIN and GODMAN, Ibis, 1879, 200 (Valle de Upar).—SCLATER, Ibis, 1883, 369 (Valle de Upar, in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 382 (Sierra Nevada de Santa Marta and Valle de Upar).

Icterus icterus (not *Oriolus icterus* Linnæus) HARTERT, Ibis, 1893, 297 ("Santa Marta"; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 162 (Salvin and Godman's reference).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 263 (Valle de Upar, in range).

Xanthornus icterus ridgwayi HARTERT, Nov. Zoöl., IX, 1902, 299 ("Santa Marta"; crit.).

Eight specimens: Rio Hacha and Fonseca.

Dr. Hartert, in describing this form from Curaçao, suggested that Santa Marta examples might be found to belong to it, which proves to be the case upon comparison. A series from Tocuyo, in west-central Venezuela, likewise belong here, but another from the State of Carabobo are much nearer typical *icterus*, as defined by Dr. Hartert. *I. i. ridgwayi* not only has a larger, relatively slenderer bill than the typical race, but is larger in all other dimensions, sex for sex, and averages paler in coloration also. Females of either form may generally be distinguished from males by their smaller size and less brilliant colors. Immature birds (*i.e.*, those in first nuptial plumage) may be told by their browner, more worn wings (excluding the tertaries).

Simons secured a specimen of this species at Valle de Upar, and later on another at some point on the south slope of the Sierra Nevada, and these two records have up to date been the only ones for this entire region. It was found by the writer to be fairly common in the Goajira Peninsula, although rather scarce in the immediate vicinity of Rio Hacha, being so much sought after by the natives for a cage bird. It is much prized for this purpose, having a natural whistling song, and is capable of being taught many notes. In a wild state it loves the giant cactus and perches on it a great deal, feeding almost entirely upon its fruit when in season. It has recently been traced into the Rio Cesar Valley as far as Valencia, where three individuals were seen in August, 1920.

455. *Megaquiscalus major assimilis* (Sclater).

Quiscalus assimilis ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 162. (Cienaga).

Megaquiscalus major assimilis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 635 ("Santa Marta").

Nineteen specimens: Buritaca, Don Diego, Gaira, Mamatoco, Trojas de Cataca, Dibulla, and Rio Hacha.

Megaquiscalus major is one of the species which has fared ill at the hands of the so-called "splitters," but, oddly enough, the status of the Colombian form has been challenged by no less an authority than Mr. Ridgway—evidently, however, on insufficient data. The present fine series, together with ten additional skins from Cartagena and Punto Zapote, Bolivar, Colombia, show that *assimilis* is perfectly distinct from *macrourus*. Males of the two forms, it is true, are scarcely distinguishable, for while those of *macrourus* average rather more violaceous, less steel blue, than those of *assimilis*, this is not a constant feature. Females, however, are very different, those of *assimilis* being decidedly more buffy (between tawny olive and isabellacolor) below, and more suffused with brownish above, than in *macrourus*. There is considerable seasonal variation, winter birds being much deeper and richer in color than those shot in May, but after allowing for all this the form is readily distinguished from *macrourus* as well as from the Mexican races, some of which, however, are much more closely related. It is true that Sclater's type of *assimilis* was a "Bogotá" skin, but that it came from that vicinity is exceedingly unlikely in view of the fact that the species is a bird of the Tropical

Zone, and entirely littoral in its habitat. Dr. Chapman writes that he doubts if *assimilis* is ever found at any great distance from the coast. Further, it is altogether probable that the Costa Rican bird belongs here also. The series from western Costa Rica in the collection of the Carnegie Museum certainly agree best with the Colombian birds, but unfortunately there is only one female from the former country.

Three males in first nuptial plumage, shot at Dibulla on February 21 and 27, are much duller than the adults, and the posterior under parts are mottled and suffused with grayish white.

A fairly common bird all along the coast from the Cienaga Grande to Rio Hacha, and along the shores of the former. At the latter locality it was common along the banks of the river, where a narrow fringe of mangroves was growing. Indeed, the birds are rarely seen far from the mangroves. They are very shy and hard to approach within shooting range.

456. *Molothrus bonariensis cabanisii* Cassin.

Molothrus cabanisii CASSIN, Proc. Acad. Nat. Sci. Philadelphia, 1866, 22 ("Santa Marta").—GIEBEL, Thes. Orn., II, 1875, 609 (ref. orig. descr.; syn. [error!]).—SCLATER, Ibis, 1884, 166 (ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 435 (ref. orig. descr.; range).

Molothrus discolor (not *Passerina discolor* Vieillot) SALVIN and GODMAN, Ibis, 1880, 123 (Arihueca).

Molothrus cassini SCLATER, Ibis, 1884, 6 ("Santa Marta," in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 337 (Arihueca).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 163 (Cacagualito); XXI, 1905, 291 (Santa Marta region; descr. eggs).

Molothrus bonariensis cassini CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIV, 1915, 662, in text ("Santa Marta"; meas.).

Two specimens: Santa Marta and Fundación.

Neither of these is mature, the male having brown wings and the female being decidedly streaked below, although both have hard skulls. A series of adults from other parts of Colombia studied in this connection indicate that the present form, described by Cassin many years ago from this very region, should stand as a geographic race of *M. bonariensis*, rather than as a distinct species, as given by Dr. Stone in his review of this group (*Auk*, VIII, 1891, 344-347). The same remarks apply to the *M. venezuelensis* of the same author, of which form a large series are at hand. As a matter of fact, *cabanisii* is very close to *venezuelensis*, but may be distinguished as a rule by the larger

size, the tail in particular being relatively longer, and by the rather deeper purple gloss of the plumage in the male. Both these forms are much more richly glossed with purple than is true *bonariensis*, contrary to the statement of Dr. Stone, who must have been comparing specimens not fully adult. The recently described *Molothrus bonariensis æquatorialis* Chapman (*Bulletin American Museum of Natural History*, XXIII, 1915, 661) certainly requires comparison with *venezuelensis*.

A very rare bird in this region, being more numerous in the Magdalena basin than elsewhere. Simons got a single specimen at Arihueca, and Mr. Smith sent in but one example, a female from Cagualito. It frequents open lands, such as pastures or old fields, and is so very shy and hard to approach that only two specimens were secured by the writer. Several nests of other birds sent in by Mr. Smith contained eggs of this species, which Dr. Allen has described as of the usual Cowbird style, white, thickly speckled with reddish brown.

457. *Cassidix oryzivora violea* Bangs.

Cassidix oryzivora (not *Oriolus oryzivorus* Gmelin) SALVIN and GODMAN, Ibis, 1879, 201 (Manaure); 1880, 123 (Minca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 329 (Minca and Manaure).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 159 (Pueblo Viejo), 178 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 163 (Valparaiso).

Cassidix oryzivora violea BANGS, Proc. New England Zool. Club, II, 1900, 11 (La Concepción [type-locality] and Palomina; orig. descr.; type now in Mus. Comp. Zool.; meas.; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 197 (Santa Marta localities and references; meas.).—DUBOIS, Syn. Avium, II, 1903, 1106 (ref. orig. descr.; range).

Cassidix violea SHARPE, Hand-List Birds, V, 1909, 488 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 434 (ref. orig. descr.; range).

Eleven specimens: Pueblo Viejo, Fundación, and Chirua.

Although no opportunity has yet been had to compare this series directly with topotypical *oryzivora* from Cayenne, the range of variation shown is so great as to raise the suspicion that the form is not so strongly characterized as Mr. Bangs (*l.c.*) and Mr. Hellmayr (*Proceedings Zoölogical Society of London*, 1911, 1122) would have us believe. At any rate, some of the skins are scarcely or not at all different from a specimen from the Caura River in Venezuela, and from a series from Bolivia, assumed (perhaps wrongfully) to represent true

oryzivora. Other individuals are very close to specimens referred (on geographical considerations) to *mexicana*. Moreover, the Bolivian specimens vary in color precisely as do those from Colombia, and altogether it looks as if the right of the latter to a distinctive name might be successfully challenged, the more so as no dependence can be placed on size as a diagnostic character.

No. 42,825, Fundación, August 12, is a young bird, with the bill almost wholly light colored, and the lores and suborbital region entirely bare.

A rare bird in the semi-arid Tropical Zone, but more numerous in the humid areas. Simons got it at Minca, and also at Manaure, near the base of the Eastern Andes, while Mr. Smith secured a single specimen as high up as Valparaiso (Cincinnati). It was encountered both by Mr. Brown and the writer at several places in the main Sierra Nevada, up to at least 3,500 feet. There was a small flock of perhaps ten birds in the scrub around Pueblo Viejo, and another small flock in the lower Chirua Valley. Several were seen at Tucurínca, and also around Fundación. It is essentially a bird of the open, where scattered trees are found, but is also present in forest where it is not too dense.

458. ***Amblycercus holosericeus*** subsp.

Five specimens: Heights of Chirua.

The color in this species being a uniform black, and the sexes being alike, the discrimination of its various races is a matter of no small difficulty, for while geographic variation is evident enough, there is little beyond difference in size and proportions upon which to rely. It is clear that the birds from Nicaragua and Costa Rica should be separated from those of Mexico, having the wing decidedly longer than the tail instead of *vice versa*, as in the others, and they have accordingly been given the name *centralis* by the present writer (*Proceedings Biological Society of Washington*, XXIX, 1916, 95). When we come to examine specimens from western Colombia we find that in the relative proportions of these parts they resemble *centralis*, to which they are nearest geographically, rather than *holosericeus*. Beyond question, however, they cannot safely be referred to either of these forms, and in the writer's judgment Dr. Chapman has done right in describing them under the name *flavirostris*. The writer has

been deterred from taking a similar course, in the case of the Chirua birds above listed, only by inability to find characters sufficient to distinguish them from true *holosericeus*, but since Dr. Chapman has succeeded in diagnosing the forms in question, the way was left open to describe the Central American race. But the birds from the Santa Marta region, as represented by the above specimens, certainly do not belong to *flavirostris*, their proportions being altogether different, as the following measurements will indicate.

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Depth of Bill.
44979	♂	Heights of Chirua, Colombia	89	100	26	13
44980	♂	Heights of Chirua, Colombia	95	105	25	13
45043	♂	Heights of Chirua, Colombia	95	102	28	13
45044	♀	Heights of Chirua, Colombia	90	99	24.5	11.5
45064	♂	Heights of Chirua, Colombia	96	106	27	13

Comparison of these figures with those given by Dr. Chapman for his specimens from western Colombia and Ecuador shows that there is a considerable discrepancy, scarcely to be accounted for by different degrees of wear. It would seem as if the color of the bill, upon which Dr. Chapman lays so much stress, is fairly constant, at least in adult birds. In the above specimens it is marked as "olive yellow" or "pale olive yellow," while in three skins from as many different localities in the State of Bolivar it is given as "pale pea green" or "yellowish pea green"—precisely as in the majority of the Costa Rican skins. The question should be studied with a much larger series of specimens, and until this can be done it seems best not to refer the specimens from the present region to any one of the described forms of the species.

Five specimens of this bird were taken on the Heights of Chirua at from 5,000 to 6,000 feet. They were all shot in the thick second growth and dense patches of "wild platinos" in the old clearings. None were seen at any other point. The species is known to belong to the Tropical Zone, but is one of those which ranges upward into the Subtropical under some conditions, as it does here.

459. *Cacicus cela* (Linnæus).

Cassicus persicus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 138 ("Santa Marta").—ALLEN, Bull. Am. Mus. Hist., XIII, 1900, 163 (Cacagualito).

Cacicus cela CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 627, 628 (Cacagualito; range).

Fifteen specimens: Don Diego.

While this series shows considerable variation with regard to the extent of yellow on the rectrices, there is no real approach to the characters of *C. vitellinus* or *C. flavicrissus*.

The writer has never seen this bird in the vicinity of Santa Marta, and it is very probable that Mr. Brown's specimens were taken elsewhere. It was abundant at Don Diego, and common also at Dibulla. It is doubtful if it ever goes above 500 feet. As is well known, it breeds in colonies, building long pendant nests like *Zarhynchus* and *Ostinops*. The birds are very noisy, and have a bewildering number of notes.

460. *Cacicus vitellinus* Lawrence.

Five specimens: Fundación and Valencia.

The occurrence of this species at Fundación (where, however, it is rare), brings its range to within a comparatively short distance of that of *C. cela*, with no evidence of intergradation. The present case constitutes a very striking illustration of the faunal differences existing between the north coast of the Santa Marta region on the one hand and the southwestern part, about the Cienaga Grande, on the other.

461. *Ostinops decumanus melanterus* Todd.

Ostinops decumanus (not *Xanthornus decumanus* Pallas) SALVIN and GODMAN, Ibis, 1879, 200 (San José and Atanquez; syn.; crit.).—SCLATER, Ibis, 1883, 151 ("Santa Marta," in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 315 (Atanquez).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 177 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 163 (Onaca).

Ostinops decumanus melanterus TODD, Proc. Biol. Soc. Washington, XXX, 1917, 3 (Las Vegas; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, VI, 1917, 146 (reprint orig. descr.).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 625, footnote (ref. orig. descr.; crit.).—BANGS and PENARD, Bull. Mus. Comp. Zool., LXIII, 1919, 39, in text (crit.).—CHAPMAN, Proc. Biol. Soc. Washington, XXXIII, 1920, 25, in text (crit.).

Additional records: La Concepción, Chirua (Brown); Fundación (Univ. Mich. Exp.).

Twelve specimens: Bonda, Masinga, Masinga Vieja, Cincinnati, Las Vegas, Minca, Agua Dulce, and La Tigrera.

A casual inspection of the series of *Ostinops decumanus* in the col-

lection of the Carnegie Museum led to the interesting discovery that the Santa Marta birds were readily distinguishable from a series of Bolivian skins ⁴¹ by their generally darker coloration, this being apparent in both sexes. The latter are distinctly brownish in tone, whether in fresh or worn plumage, with the chestnut shading on the feathers of the upper parts much more pronounced (in males at least). The Colombian birds, on the contrary, are deep glossy black, with little or no chestnut tipping to the feathers of the upper and under parts. Venezuelan and Trinidad birds agree with those from Bolivia. From Surinam, the accepted type-locality of *Xanthornus decumanus* Pallas, no specimens have been available, but a Cayenne bird (No. 34,743, Collection Museum Comparative Zoölogy, adult male) presents the extreme of brownness, the upper parts being practically chestnut, except on the head and neck, with broad chestnut edgings to the scapulars; the posterior under parts are likewise heavily shaded with chestnut. The characters here pointed out have been found to hold good for the series of this species in the collections of Mr. James H. Fleming and of the Museum of Comparative Zoölogy, and also, according to Dr. Harry C. Oberholser, who studied it at the writer's request, in that of the U. S. National Museum. Panama skins are easily referable to the form here described, but no specimens from Colombia south of the coast region have been examined. There is of course some variation in both forms, and occasional specimens may be difficult to place offhand, but on the whole the differential characters seem to be fairly constant—certainly sufficiently so to justify the subdivision of the species as indicated.

This bird was found by the writer only on the north and west slopes of the San Lorenzo, from the lower edge of the foothills up to about 4,000 feet, although above 2,500 feet it was rare. Mr. Brown, however, secured it at Palomina, at an altitude of about 5,000 feet in the Sierra Nevada, as well as at La Concepción and Chirua, and Simons recorded it from San José, at the same altitude, and from Atanquez, a thousand feet lower down—both localities being on the south slope of this range. It seems thus to be a bird of the foothills region of the Tropical Zone, but extending in reduced numbers into the Subtropical also. For some reason it seemed to be entirely absent in the humid forest section of the northeast coast, where it was replaced by *Cacicus*

⁴¹ Dr. Chapman, however, considers these separable from true *decumanus*.

cela. A few were noted at Fundación also, as well as on the other side of the mountains, at Loma Larga, Fonseca, and Valencia. As is well known, the birds live and breed in colonies, building from a half-dozen to fifty nests in one tree. They are noisy, making many curious sounds, and in their food-habits seem to be largely vegetarians.

Family TANAGRIDÆ.⁴² TANAGERS.

462. *Schistochlamys atra atra* (Gmelin).

Schistochlamys atra BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 104 (La Concepción and San Antonio).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 166 (Bangs' reference).

One specimen: Chirua.

The single specimen sent in by Mr. Carriker agrees with a series from northern Venezuela in having the capistrum deep black instead of brownish black, as in most examples from Brazil, Bolivia, etc. The subdivision of the species proposed by the present writer a few years ago (ANNALS CARNEGIE MUSEUM, VIII, 1912, 203), based on this character, can probably be maintained, but a good series from French Guiana shows that it is the southern bird which requires to be separated. It will take the name *olivina* Sclater, based on a female from Matto Grosso, Brazil.

Mr. Brown got twelve specimens of this tanager at La Concepción, Chirua, and San Antonio, but it proved to be very rare or absent in all the localities in the Sierra Nevada visited by the writer. The single specimen secured was shot on the grass-covered mountainside south of the Chirua Valley, at an altitude of about 3,500 feet. No others were seen. It apparently is a species of the Upper Tropical Zone, at least in this region.

Habia fuscicauda erythrolæma Sclater.

Phanicothraupis rubicoides (not *Saltator rubicoides* Lafresnaye) SCLATER, Proc. Zool. Soc. London, 1856, 120 ("Santa Marta"; crit.).

Phanicothraupis erythrolæma SCLATER, Cat. Am. Birds, 1861, 83 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.).

Phanicothraupis fuscicauda erythrolæma BANGS, Proc. New England Zool.

⁴² The shifting of the generic name upon which a family is based to another group within the family limits should not, in our opinion, necessitate a change in the family name. We therefore retain *Tanagridæ* for the Tanagers and *Carebidæ* for the Honey Creepers.

Club, II, 1900, 30 ("Santa Marta," in range).—THAYER and BANGS, Bull. Mus. Comp. Zool., XLVI, 1906, 222 (Santa Marta ?; crit.).

Phanicothraupis fuscicauda (not of Cabanis) SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1883, 302 ("Santa Marta"; syn.; crit.).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 199 ("Santa Marta"; syn.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 152 ("Santa Marta," in range; references).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1071 ("Santa Marta," *ex* Sclater).

Specimens of a *Phanicothraupis* purporting to come from Santa Marta, and bearing the name *erythrolama*, in Bonaparte's handwriting, were referred to by Sclater in 1856, and provisionally described by him a few years later. They were presently identified as *P. fuscicauda* Cabanis, a Central American species, but more recently Sclater's name has been revived to apply to the Panama form of the species. This action was based on a reëxamination of Sclater's type, now in the collection of the British Museum. As intimated by Messrs. Thayer and Bangs in discussing this matter, it is exceedingly doubtful if the type really came from Santa Marta. In view of the thorough work done in this section by Messrs. Smith, Brown, and Carriker, all of whom failed to find any species of this group there, and in consideration of the fact that an entirely distinct species, *H. rubiginosa*,⁴³ occupies an intervening area on the north coast of Colombia, it seems practically certain that the original locality ascribed to *erythrolama* must have been erroneous.

Serricossypha albocristata (Lafresnaye).

Lamprotes albicristatus SCLATER, Proc. Zool. Soc. London, 1856, 121 ("Santa Marta").

This is an Andean species, attributed to this region by Sclater, on the strength of a specimen said to have been collected by Fontainier, and deposited in the Paris Museum. Additional evidence will be required before the record can be accepted.

463. **Eucometis cristata cristata** (Du Bus).

Eucometis cristata SCLATER, Proc. Zool. Soc. London, 1856, 118 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1861, 84 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 121 (Arihueca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 218 ("Santa Marta," Arihueca, and Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 142 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 168 (Bonda, Onaca, and Cacagualito).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1079 ("Santa Marta?," in range).

Additional records: Tucurinca (Carriker).

Twenty-nine specimens: Bonda, Don Diego, Cacagualito, Las Nubes, Minca, La Tigrera, Las Vegas, Cincinnati, Fundación, Pueblo Viejo, and Valencia.

⁴³ Described by the writer in the *Proceedings of the Biological Society of Washington*, XXX, 1917, 3.

No. 9,382 (Don Diego, May 16) is in juvenal plumage, the post-juvenal moult just starting. At this stage the throat is pyrite yellow, paler than the back, and the rest of the under surface is primuline yellow, the breast darker, with obsolete dusky streaking. The back is green (between dark citrine and warbler green), darker than in the adult, and the pileum is the same color. Nos. 38,100 (August 17) and 38,155 (August 29), taken three months later in the season, are in first winter dress, which is as bright above and below as that of the adult, but the crown is still dull green as in the earlier stage, likewise the throat, although both show numerous gray feathers intermixed. Possibly the pileum and throat do not become entirely gray until the later moult.

This is a species of the Tropical Zone, which, while it ranges into the mountains up to 4,000 feet, is rare above 2,000 feet, being far more numerous in the littoral area. It was especially common at Minca and Don Diego. It is found only in the forest, in the thick undergrowth, near the ground, occurring in pairs or small flocks. It is not shy, and may usually be approached without trouble. It has a loud, rather musical chirp, but no song, and seems to be entirely insectivorous in its food-habits.

464. *Tachyphonus luctuosus panamensis* Todd.

Tachyphonus luctuosus (not of Lafresnaye and D'Orbigny) SCLATER, Proc. Zool. Soc. London, 1856, 114 ("Santa Marta").—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 208 ("Santa Marta").—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1074 ("Santa Marta," in range).

Seven specimens: Fundación and Tucurínca.

Adult males differ from those of *T. axillaris* as pointed out by Mr. Ridgway, namely, in having the white middle wing-coverts more extended, reaching considerably beyond the tips of the primary-coverts in the closed wing.⁴⁴ A series from the Orinoco region vary somewhat in this respect, but another from east-central Bolivia, which may safely be assumed to represent typical *luctuosus*, are constantly dif-

⁴⁴ An unfortunate and misleading error crept into the original description of this form as it appeared in the *Proceedings of the Biological Society of Washington*, XXX, 1917, 128. As shown in the present discussion, it is the adult male of *Tachyphonus luctuosus luctuosus* (not *T. luctuosus panamensis*) which is "not certainly distinguishable from the same sex of *Tachyphonus axillaris* Lawrence."

ferent, the white area on the wing-coverts averaging smaller if anything than in *axillaris*, usually falling short of the primary-coverts in the closed wing. Males in ordinary plumage of *axillaris* are thus scarcely to be distinguished from those of *luctuosus* from Bolivia, but that the two are distinct species admits of scarcely a doubt, inasmuch as in high plumage, possibly coincident with age, we find that *axillaris* has a concealed crown-spot of bright yellow, while in the corresponding stage of *luctuosus* this crown-spot is rich chestnut. Females of the two species are readily distinguishable also, those of *axillaris* having the pileum greenish, like the back, rather than grayish, and the throat more washed with yellowish, not so distinctly white.

That the Colombian and Venezuelan birds represent an unrecognized subspecies, as already intimated by Mr. Ridgway (*Bulletin U. S. National Museum*, No. 50, II, 1902, 133, footnote), seems practically certain from an examination and comparison of the material brought together for use in this connection. Unfortunately there are no such high-plumaged males among the Panama birds examined, but that the form is conspecific with *T. luctuosus* rather than with *T. axillaris* is indicated by the close resemblance of the females with those of the former.

In juvenal dress (illustrated by No. 63,192, Collection Academy of Natural Sciences of Philadelphia, Tucurinca, September 15, 1915) the species is duller, more buffy yellow below than the adult female, with the throat and breast more greenish; the pileum is wholly dull green; the back has a slight brownish wash, and the wing-coverts are edged with buffy. In first winter plumage the throat is more or less tinged with yellow.

This little tanager was met with only around Tucurinca and Fundación, and was quite rare, very few being seen in addition to the specimens actually taken. It was usually found in company with other small birds of similar habits, keeping well up in the tree-tops.

465. *Tachyphonus rufus* (Boddaert).

Tachyphonus rufus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 160 (Pueblo Viejo), 179 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 168 (Bangs' reference).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1074 ("Santa Marta," in range).

Additional records: La Concepción, San Francisco (Brown).

Twelve specimens: Minca, Pueblo Viejo, and Chirua.

These are not different in any way from a series from Venezuela and Trinidad.

First met with at Minca, where a single male was seen and secured. It was not again encountered until after reaching Pueblo Viejo, where Mr. Brown's first specimens were taken, and where it proved to be a common bird between 1,500 and 2,500 feet. It was rare at San Miguel, for while conditions of habitat were practically the same, the altitude was apparently a little too high, and the temperature correspondingly lower. It is essentially a species of the foothill-region of the Tropical Zone. It haunts open woodlands, scattered shrubbery, and the edges of the forest, and is a very noisy and active bird.

Ramphocelus flammigerus (Jardine and Selby).

Ramphocelus flammigerus SCLATER, Cat. Am. Birds, 1861, 79 ("Santa Marta").

The locality quoted is evidently a mistake. What appears to be the same specimen was later given without indication of any more definite locality than "Colombia". (Sclater, *Catalogue of the Birds in the British Museum*, XI, 1886, 177).

466. **Ramphocelus dimidiatus dimidiatus** Lafresnaye.

Ramphocelus dimidiatus SCLATER, Proc. Zool. Soc. London, 1856, 129 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 120 (San Antonio).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1883, 283 ("Santa Marta," in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 172 (San Antonio).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta"), 159 (Pueblo Viejo), 179 (Palomina and San Miguel).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 168 (Cacagualito); XXI, 1905, 292 (Cacagualito and Don Diego; descr. nest and eggs).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1059 (San Miguel, Palomina, and Cacagualito, in range).

Ramphocelus dimidiatus dimidiatus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 116 ("Santa Marta"; meas.; references).

Additional records: La Concepción (Brown); Mamatoco (Carriker).

Thirty-one specimens: Cacagualito, Buritaca, Don Amo, Cincinnati, La Tigrera, Minca, Agua Dulce, Fundación, Don Diego, Tierra Nueva, and Loma Larga.

The series exhibits a great deal of variation as regards the extent of the black abdominal patch in adult males, suggesting that this character, upon which Mr. Bangs relies in part in separating *R. d. limatus*, should be used with caution. Judging from two obviously immature males with hard skulls taken August 12, and which are moulting into

the dress of the adult, there is ground for suspecting that this species, like many other tanagers, does not acquire the fully adult plumage until the first postnuptial moult.

This handsome species, described originally from Carthagena, is a bird of the Tropical Zone, ranging in the Santa Marta region over the more humid portions of the littoral district, and up into the mountains to a height of nearly 5,000 feet on the western slopes of the San Lorenzo, as well as in the Sierra Nevada proper. It was abundant at Loma Larga, at the eastern extremity of the range, and was noted also at the crossing of the Rio Barbacoas, near Arroya de Arenas, and at Fonseca. It is a bird of the more open country, frequenting the edges of woodland, scrub-growth, shrubbery-dotted pastures, etc. About Fundación it is very common, and even more so at Don Diego, where it occurs in pairs or small flocks, very noisy, all over the plantation. Dr. Allen has described nests collected by Mr. Smith as compact, deeply cupped structures, built in the fork of a branch of a coffee-tree, and composed externally of plant-stems, lined with finer stems and wire-grass. "The eggs are blue, finely spotted with light and dark chocolate over most of the surface, but with the spots generally larger and more numerous about the larger end." They were laid in May.

467. *Nemosia pileata hypoleuca* Todd.

Nemosia pileata (not *Tanagra pileata* Boddaert) SALVIN and GODMAN, Ibis, 1880, 121 (Valencia; range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 223 (Valencia).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 167 (Salvin and Godman's reference).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1084 (Santa Marta, in range).

Nemosia pileata hypoleuca TODD, Proc. Biol. Soc. Washington, XXIX, 1916, 95 (Tucurinca; orig. descr.; type in coll. Carnegie Mus.).—APOLINAR MARIA, Bull. Soc. Cien. Nat. Inst. La Salle, IV, 1916, 117 (reprint orig. descr.).

Fourteen specimens: Fundación and Tucurinca.

Following von Berlepsch, these were at first referred to typical *pileata*, described from Cayenne, until the acquisition of specimens from the State of Carabobo, Venezuela, presumably referable to the form in question, showed that the facts were otherwise. The Santa Martan form differs conspicuously from both true *pileata* (as represented by the Venezuelan specimens above referred to) and *paraguayensis* in its smaller size and much whiter under parts, with little or

none of the bluish gray suffusion on the sides and flanks in the male, and the buffy tinge on the throat and breast much paler in the female. The type measures as follows: wing, 69; tail, 45; bill, 12; tarsus, 17.5. It is thus as small as *N. p. nana* von Berlepsch, described from north-east Peru, and may possibly be the same, although it is fair to presume that had *nana* been different in coloration von Berlepsch would not have failed to mention it. Unfortunately no specimens from Peru have been available for comparison in this connection. The characters attributed to *hypoleuca* are remarkably constant in a series of twenty-eight specimens from the northern littoral of Colombia.

This species was met with only at Tucurínca and Fundación, where it was not uncommon, occurring both in the alluvial plain and in the lower reaches of the foothills. It is a bird of the woodlands, preferring the more or less open kind, and keeps rather high up in the trees, reminding one of the vireos in its general habits and behavior. Simons secured a pair at Valencia, May 20, 1879, this being the only record for the species in this region hitherto.

468. *Piranga testacea faceta* Bangs.

Piranga faceta BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.); XIII, 1899, 104 (La Concepción and San Miguel).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121 (Bangs' record).—DUBOIS, Syn. Avium, I, 1901, 658 ("Santa Marta," in range; ref. orig. descr.).—SHARPE, Hand-List Birds, V, 1909, 385 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 418 (ref. orig. descr.; range).

Piranga hamalea (not of Salvin and Godman) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 168 (Bonda, Onaca, Minca, Cacagualito, and Masinga Vieja).

Pyrranga testacea faceta VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1064 ("Santa Marta," in range; ref. orig. descr.).

Thirty-five specimens: Minca, Cincinnati, and Las Vegas.

This form is so close to *P. t. testacea* of Central America that, in common with Messrs. Hellmayr, von Berlepsch, and others, the writer considers it merely subspecifically distinct. Males differ from those of *testacea* in being a very little brighter red, and in having rather smaller, paler bills. Females differ more than males, being decidedly more yellowish, less greenish, especially below. Some examples of both sexes are very close to *P. rubra rubra*, but may of course always be distinguished by having the maxilla prominently toothed. In first

winter plumage males resemble the adult females, but it is not clear whether or not they breed in this plumage. At any rate, there are four specimens, taken at dates varying from June 16 to August 2, illustrating various stages of the moult from this immature into adult dress, and presenting a curious mixed red and yellow plumage.

The range of this form, which was described by Mr. Bangs from specimens taken at an altitude of 3,000 feet near Santa Marta, was at first supposed to be confined to this region, but it is now known to extend through Venezuela to the island of Trinidad. Specimens from these regions are absolutely indistinguishable from Santa Martan birds, but *P. h  malea* of Mount Roraima, British Guiana, is said to be very different.

This tanager is a rather abundant bird in the foothills and lower slopes of the San Lorenzo, mainly on the north and northwest sides, but apparently is rare in the Sierra Nevada, although reported from La Concepci  n and San Miguel by Mr. Brown. It was rare also at Las Vegas, apparently not relishing the excessive humidity of that side of the mountain. Very likely its original habitat was the "dry forest" of the foothills, where open tracts are common, since it was found breeding below 2,000 feet under such conditions. As the forest was cut away the species has evidently adapted itself to a higher altitude, so that it is now common in the coffee-plantations up to 5,000 feet, although not detected in the forest above 3,000 feet. Several nests were found, built in most peculiar situations for a *Piranga*. Two were placed among some roots under an overhanging bank by the roadside on the mountain slope, while a third was built in a small shrub, almost two feet from the ground, on top of the bank along the road. Two eggs are laid, which resemble those of *P. erythromelas*, while the nest is practically the same, being a very frail, flat structure of fine rootlets.

469. *Piranga rubra rubra* (Linn  us).

Piranga astiva SALVIN and GODMAN, Ibis, 1879, 200 (Atanquez); 1880, 121 (Santa Marta and Minca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 182 (Santa Marta).

Piranga rubra BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 168 (Bonda, Onaca, and Valparaiso; plum.).—ALLEN, Auk, XVII, 1900, 365 (Bonda; plum.; Salvin and Godman's and Bangs' references).

Fourteen specimens: Bonda, Las Nubes, Cincinnati, Don Diego, Dibulla, Pueblo Viejo, and Chirua.

The extreme dates represented are November 11 and March 26. There is a specimen in the collection of the American Museum of Natural History (not recorded by Dr. Allen) dated October 19, 1899. Most of the series were taken in January and March, and appear to be in fresh, or at least unworn, plumage. There is one female (No. 44,716, Dibulla, February 23) which is much worn, and is beginning the moult, and a young male (45,008, Pueblo Viejo, March 17) which is assuming the red feathers of the first nuptial dress.

The Summer Tanager is a common winter visitor from sea-level up to 5,000 feet, and is especially in evidence about the coffee-plantations.

470. *Sporathraupis cyanocephala margaritæ* Chapman.

Tanagra cyanocephala auricrissa (not *Dubusia auricrissa* Scater) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 168 (Valparaiso and El Libano).

Sporathraupis cyanocephala margaritæ CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 165 (Valparaiso; orig. descr.; type in coll. Am. Mus. Nat. Hist.; crit.).—HELLMAYR and VON SEILERN, Verh. Orn. Ges. Bayern, XI, 1913, 255 (ref. orig. descr.; range).—APOLINAR MARIA, Bol. Soc. Cien. Nat. Inst. La Salle, II, 1914, 245 (ref. orig. descr.).

Eight specimens: El Libano, Las Vegas, San Miguel, and Heights of Chirua.

The two specimens of *Sporathraupis* sent in by Mr. Smith were referred by Dr. Allen to *S. cyanocephala auricrissa*, but later on the receipt of an authentic series of the latter led Dr. Chapman to describe the Santa Martan bird as a new subspecies, which he named in honor of Mrs. Smith. Not only is the bird a little smaller than *auricrissa*, but the blue of the head is more or less spread over the throat and breast, the upper parts are decidedly tinged with brownish (the exact color being midway between orange-citrine and medal-bronze), and (what is not mentioned in the original description) the crissum is much duller (between aniline-yellow and sulphine-yellow, instead of light cadmium or empire-yellow). Males agree among themselves, and differ from females in having more blue on the throat.

In the San Lorenzo district this bird was taken only in the very humid forest at Las Vegas, at an altitude of about 6,000 feet, and only a few were seen. Later it was taken in the Sierra Nevada, at Chirua

and San Miguel, under similar conditions and at about the same altitude. It was met with in the tree-tops, in company with *Tangara heinei*.

471. *Thraupis palmarum atripennis* Todd.

Tanagra palmarum (not of Wied) SALVIN and GODMAN, Ibis, 1880, 120 (Minca).

—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 159 ("Santa Marta" and Minca).

Tanagra palmarum melanoptera (not of Sclater) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 169 (Bonda and Cacagualito).—CLARK, Auk, XX, 1903, 398 ("Santa Marta"; meas.; crit.).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1053 ("Santa Marta," in range).

Twelve specimens: Cacagualito, Don Diego, Fundación, Tierra Nueva, Mamatoco, Dibulla, Santa Marta, and Tucurínca.

Individual variation in *Thraupis palmarum* is so considerable as to greatly complicate the definition of the several geographic races into which the species seems to be divided. The matter has been discussed in some detail by Mr. Clark, but apparently without coming to any very definite conclusion. Santa Martán specimens resemble those from Costa Rica in their rather smaller size and generally darker coloration as compared with birds from Guiana, Brazil, and Bolivia, and seem well entitled to separation under the name recently proposed by the writer (*Proceedings Biological Society of Washington*, XXXV, 1922, 92).

Although several of the records above quoted refer to localities lying at a higher altitude, this tanager seems to prefer the coastal plain, and is seldom seen above 1,000 feet. Its habits are practically the same as those of *T. episcopus cana*, with which it is often found associated.

472. *Thraupis glaucocolpa* (Cabanis).

Three specimens: Dibulla, Arroya de Arenas, and Fonseca.

A single specimen of this species was taken at Dibulla on February 21, 1914, but although a sharp lookout was kept for it during the few days afterwards spent there, no others were seen. It proved to be fairly common, however, in the valley of the Rio Rancheria, having been observed at Arroya de Arenas, Loma Larga, and Fonseca during the course of the writer's visit to these parts in July, 1920. The species is known mainly from the north coast of Venezuela, but appears to be rare in collections. The above specimens agree with a small

series from Venezuela. This is a new record for the Santa Marta region.

473. *Thraupis episcopus cana* (Swainson).

Tanagra diaconus SCLATER, Proc. Zool. Soc. London, "1856," 1857, 233 ("Santa Marta").

Tanagra cana SCLATER, Cat. Am. Birds, 1861, 75 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 120 (Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 156 (Santa Marta).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 169 (Bonda and Cacagualito); XXI, 1905, 292 (Bonda, Masinga [Vieja], and Mamatoco; descr. nest and eggs).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1051 (Santa Marta, in range).

Additional records: La Concepción (Brown); Tucurínca (Carriker).

Nineteen specimens: Bonda, La Tigrera, Mamatoco, Minca, Fundación, Don Diego, Dibulla, and Santa Marta.

Specimens of the Blue Tanager from the Santa Marta region resemble those from northern Venezuela, the assigned type-locality of *cana*, in having the wing-coverts violaceous blue (between smalt-blue and cornflower-blue). Since intergradation between *cana* and *episcopus* appears to be complete, they had best be regarded as conspecies.

A bird of the Tropical Zone, ranging from sea-level up to 3,000' feet, but above 2,000 feet it cannot be considered more than a straggler. It is most partial to the lowlands, where it was fairly common at almost all points visited. It prefers open woodland, and keeps to the tree-tops, feeding largely on fruit. It has a musical call-note, but no song so far as observed.

Mr. Smith sent in six nests, collected in April and May. These are described by Dr. Allen as follows: "The nests, placed usually on the fork of a small horizontal branch (one is on an upright fork), are compact and neatly built, forming a deep cup with very thick walls, of rather fine vegetable fibers mixed copiously with plant down, and in one case with ravelings, bits of cloth, and a little wool, and several have a few feathers; one has the whole outside covered with cotton; another has as a prominent feature bits of gray and green cloth; others are almost wholly without any of these conspicuous accessories. . . . The eggs [one to three in number] are faintly bluish white, rather heavily streaked and spotted all over with lavender and

blackish chocolate, the former predominating, the markings generally covering the greater part of the surface of the eggs. In some sets, however, the markings are much less abundant; covering less than half the surface."

474. *Tangara heinei* (Cabanis).

Calospiza atricapilla (not *Tanagra atricapilla* Gmelin) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 169 (Valparaiso and Las Nubes; crit.).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1040 (Valparaiso, in range).

Tangara atricapilla CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 600 (Valparaiso; crit.).

Twenty-four specimens: Les Nubes, Valparaiso, Cincinnati, Las Taguas, Las Vegas, San Miguel, and Heights of Chirua.

For the change of name see Bangs and Penard, *Bulletin Museum of Comparative Zoölogy*, LXIII, 1919, 36.

Although the amount of variation in shade of color in this species is certainly remarkable, ranging in the case of the adult male from deep glaucous green to forget-me-not-blue, it seems impossible to correlate these differences with geographic areas. Both extremes occur in the present series. In juvenal dress, represented by specimens dated May 31, June 7, and August 7, both sexes resemble the adult female, but are much duller throughout, the pileum duller green than the back, while the under surface is extensively yellowish buffy, obscurely streaked with dusky. Two males from the Heights of Chirua and San Miguel, dated March 21 and 25 respectively, are probably in first nuptial dress. The outer primaries and the tertiaries have been renewed, and are blue-edged; the remaining remiges are green-edged. The rectrices are all blue-edged in one, but only the outer ones in the other. Both have the back more or less tinged with green.

This beautiful little tanager is found only in the heavy Subtropical Zone forest between 4,000 and 6,000 feet, and is most abundant on the slopes of the San Lorenzo, being very rare in the Sierra Nevada. It is almost invariably seen in small flocks, together with other species of similar habits, feeding in the tree-tops. Next to *T. desmaresti*, it is the most abundant species of the genus in this region, and it seems odd that Mr. Brown did not meet with it. Most of Mr. Smith's specimens came from Valparaiso (now called Cincinnati).

475. *Tangara cyanoptera* (Swainson).

Calliste cyanoptera SALVIN and GODMAN, Ibis, 1879, 198, 200 (San José and Atanquez; crit.); 1880, 120 (Minca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 135 (Minca and San José).

Calospiza sp. BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta"; crit.).

Calospiza cyanoptera BANGS, Proc. Biol. Soc. Washington, XII, 1898, 159 (Pueblo Viejo), 179 (Palomina and San Miguel).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 170 (Salvin and Godman's and Bangs' references).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1040 (Minca and San José, in range).

Additional records: La Concepción, San Francisco (Brown).

Eight specimens: Pueblo Viejo, Cincinnati, Chirua, and Heights of Chirua.

The series is uniform with specimens from other localities. No. 44,811 (March 4) is a young male, assuming the black head. No. 44,932 (March 10) is a female in juvenal dress, with the crown dull bluish green, the wings and tail dusky, with greenish edgings, the throat and breast obscurely streaked with dusky bluish and yellowish white, and the rest of the under parts dull yellowish, shaded with greenish on the sides.

In the San Lorenzo district this is a very rare bird—as rare, indeed, as *T. heinei* is in the Sierra Nevada. It is more numerous in the latter district, where it has been encountered at sundry localities by Messrs. Simons and Brown, and by the writer, but even here it is not as common as *T. heinei* is in the San Lorenzo. In its habits it resembles that species. It has a somewhat more extensive altitudinal range, however, having been recorded by Simons from as low down as Minca, and by Mr. Brown and the writer from Pueblo Viejo, at approximately the same elevation (2,000 feet), ranging thence up to 6,000 feet or more.

476. *Tangara viridissima toddi* Bangs and Penard.

Calliste desmaresti (not *Tanagra desmaresti* Vieillot) SALVIN and GODMAN, Ibis, 1880, 120 (Guallabal and Minca).—SCLATER, Cat. Birds. Brit. Mus., XI, 1886, 118 (Minca).

Calospiza desmaresti BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta"), 159 (Pueblo Viejo), 179 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 169 (Bonda, Agua Dulce, Onaca, Cacagualito, and Valparaiso).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1039 (Santa Marta localities, in range).

Tangara desmaresti HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 58 (Sierra Nevada de Santa Marta, in range).

Tangara viridissima (not *Aglaia viridissima* Lafresnaye) HELLMAYR, Verh. Orn. Ges. Bayern, XIV, 1920, 283, note ("Santa Marta," in range, crit.).

Tangara viridissima toddi BANGS and PENARD, Proc. Biol. Soc. Washington, XXXIV, 1921, 92 (San Francisco; orig. descr.; type in coll. Mus. Comp. Zool.).

Additional records: La Concepción, San Antonio, San Francisco, San Miguel (Brown); Las Taguas (Carriker); Las Nubes (Smith).

Nineteen specimens: Jordan, Onaca, Cincinnati, Don Diego, and Las Vegas.

Santa Martan specimens appear to differ from typical Trinidad birds of this species in their generally brighter, less bluish green coloration, while the cap and tibiae are paler maroon. A series from Venezuela and another from Boyaca, Colombia, however, are different again. Nos. 42,094 (May 31) and 42,167 (June 7) are immature birds, in which the green color is much paler throughout, and the maroon of the head is merely indicated, most of the crown being greenish, with a saffron tinge.

Tangara viridissima toddi is the most abundant and widespread of the genus in this region, ranging on the north and west slopes of the San Lorenzo from the lower edge of the foothills up to about 7,000 feet, or from the Tropical well into the Subtropical Zone. It is present also on the coastal plain at Don Diego, but is rare. It is not so common at Pueblo Viejo as on the San Lorenzo, and ranges much lower down there. Simons secured it at Guallabal, near San Antonio, while Mr. Brown collected a series at several localities in this neighborhood. The species is gregarious in its habits, and is abundant in the shade-trees of the coffee-plantations.

477. *Pœcilothraupis melanogenys* Salvin and Godman.

Pœcilothraupis melanogenys SALVIN and GODMAN, Ibis, 1880, 120, pl. 3 (San Sebastian; orig. descr. type now in coll. Brit. Mus.; crit.).—REICHENOW and SCHALOW, Journ. f. Orn., XXVIII, 1880, 323 (reprint orig. descr.).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 147 (Templado and San Sebastian; descr.).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 179 (Macotama); XIII, 1899, 104 (Sierra Nevada de Santa Marta, 7,500–12,000 ft. [?]).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 169 (El Libano and San Lorenzo).—DUBOIS, Syn. Avium, I, 1901, 664 (ref. orig. descr.; range).—SHARPE, Hand-List Birds, V, 1909, 374 (range).—VON BERLEPSCH, Verh.

V. Int. Orn.-Kong., 1911, 1046 (Santa Marta localities; ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 413 (ref. orig. descr.; range).

Additional records: Paramo de Macotama (Brown).

Twenty-eight specimens: El Libano, San Lorenzo, Heights of Chirua, San Miguel, and Sierra Nevada de Santa Marta (6,000 and 8,000 feet).

Some females of this series have the black area on the sides of the head a little duller, but many are quite indistinguishable from males.

This beautiful tanager is peculiar to the Santa Marta region, where it is a characteristic species of the Subtropical Zone. On the San Lorenzo it ranges from 6,000 feet to the highest point, but in the Sierra Nevada it is found from 5,000 to about 9,000 feet, or perhaps even 10,000 feet, although the writer cannot now recall having seen it above 9,000. Mr. Brown reported it up to 12,000 feet, which is certainly a mistake, as it is a woodland bird entirely, and no forest is found in the Sierra Nevada at that altitude. It travels about in the tops of the trees in pairs or small bands, and never comes down near the ground. It has a weak chirping note, easily recognized when once learned.

It was described from a pair of birds taken by Simons near San Sebastian, on the south slope of the Sierra Nevada, at an altitude of 8,000 feet. Later another male was secured at Templado, and the species continued to be known from these three examples alone until Mr. Brown's and Mr. Smith's series were obtained.

478. *Tanagra crassirostris* (Sclater).

Euphonia lanirostris (not of Lafresnaye and D'Orbigny) SALVIN and GODMAN, Ibis, 1879, 199 (Ataquez; crit.); 1880, 119 (Santa Marta, Minca, and Ataquez).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1883, 262 (Sierra Nevada de Santa Marta, in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 76 (Santa Marta, Minca, and Ataquez):

Euphonia crassirostris BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta"), 179 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 170 (Bonda, Onaca, Minca, and Cacagualito; crit.).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 28 ("Santa Marta"; meas.; references).

Euphonia crassirostris brachyptera VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1019 (Santa Marta, in range), 1128 (Bonda; crit.; meas.).

Tanagra crassirostris BRABOURNE and CHUBB, Birds S. Am., I, 1912, 401 (ref. orig. descr.; range).

Tanagra crassirostris crassirostris CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 591 ("Santa Marta"; meas.).

Additional records: La Concepción, Chirua (Brown); Fundación (Carriker).

Thirty-five specimens: Bonda, Minca, Cacagualito; Mamatoco, Cincinatti, La Tigrera, and Don Diego.

A study of this ample series, taken in connection with considerable material from other parts of the range of the species, shows conclusively that the variation in the gloss of the upper parts from violet to steel-blue, upon which von Berlepsch mainly relied to discriminate a form *brachyptera*, is individual and not geographical. The slight and inconstant difference in size to which this author has called attention is scarcely sufficiently important to recognize in nomenclature. It is therefore unnecessary to discuss the matter of the type-locality of the species, further than to call attention to the fact that Sclater based his description on "Bogotá" skins, while later, in the *Catalogue of the Birds in the British Museum*, he expressly designated a specimen said to be from "Santa Marta" as the type.

It is evident that this species breeds in the immature dress, in which the males have greenish-edged remiges and rectrices, with the upper parts in general also green, like the females, but with a more or less extensive admixture of steel-blue feathers, apparently acquired at the postjuvénal moult. No. 38,079 (August 15) shows the first postnuptial moult in progress.

A bird of the Tropical Zone, ranging from sea-level up to 5,000 feet, but most abundant between 1,000 and 2,500 feet, especially between La Tigrera and Minca in the "dry forest" section. Above 3,500 feet it is scarcely more than a straggler. It is usually met with in pairs or small flocks, and is not shy. It seems to be entirely frugivorous, and is particularly fond of the fruit of a certain mistletoe-like parasite. Its note is a pleasant musical whistle. The nest is a domed structure, composed almost entirely of the dry blades of a fine-leaved bamboo-like plant, and is placed in a small cavity under an overhanging bank, often along the roadside. The eggs, from two to four in number, are white, thickly speckled with reddish brown, much resembling those of the Black-capped Chickadee.

***Tanagra fulvicrissa fulvicrissa* (Sclater).**

Euphonia fulvicrissa SCLATER, Proc. Zool. Soc. London, "1856," 1857, 276 ("Santa Marta"; orig. descr.; type now in coll. Brit. Mus.; crit.).—SCLATER, Cat. Am. Birds, 1861, 58 ("Santa Marta").—SCLATER and SALVIG.

Proc. Zool. Soc. London, 1864, 349 ("Santa Marta," in range).—GRAY, Hand-List Birds, II, 1870, 78 ("Santa Marta," in range).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 18 (range).—GIEBEL, Thes. Orn., II, 1875, 135 (references).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1883, 264 ("Santa Marta," in range).—VON BERLEPSCH, Journ. f. Orn., XXXII, 1884, 288 ("Santa Marta," in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 73 ("Santa Marta").—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, II, 1902, 18 ("Santa Marta," in range; references).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1018 ("Santa Marta," in range; ref. orig. descr.).—HELLMAYR, Proc. Zool. Soc. London, 1911, 1100 ("Santa Marta"; crit.).—HARTERT, Bull. Br. Orn. Club, XXXIII, 1913, 77, in text (crit. on type-locality).

Tanagra fulvicrissa BRABOURNE and CHUBB, Birds S. Am., I, 1912, 401 (ref. orig. descr.; range).

This species was described from a Verreaux specimen said to have come from "Santa Marta in New Grenada," but no one of the several collectors who have worked in this region has succeeded in detecting the bird there. Dr. Hartert, who has examined the type, tells us that it agrees precisely with Central American examples, and there can be little doubt but that it actually came from Panama, the localities assigned by Verreaux to his specimens being notoriously incorrect.

479. *Tanagra trinitatis* (Strickland).

(?) *Euphonia chlorotica* (not *Tanagra chlorotica* Linnaeus) SCLATER, Cat. Am. Birds, 1861, 57 ("Santa Marta").

Euphonia trinitatis SCLATER, Cat. Birds Brit. Mus., XI, 1886, 66 ("Santa Marta").—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 170 (Bonda); (?) XXI, 1905, 293 (Bonda; descr. nest and eggs).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1014 ("Santa Marta," in range).

Tanagra trinitatis CHERRIE, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 169 (Bonda; crit.).

Additional records: Fundación (Carriker).

Sixteen specimens: Bonda, Onaca, Santa Marta, Mamatoco, Tierra Nueva, and Fonseca.

This series does not afford any ground for supposing that birds from this region constitute a distinct race, as recently suggested by Mr. Cherrie. In first nuptial plumage males resemble fully adult birds of that sex in having the crown and under parts yellow, but elsewhere they have more or less of the green plumage seen in the female. In juvenal dress both sexes are dull yellow below, including the throat.

This little tanager is not nearly so common as *T. crassirostris*, nor does it have so extensive an altitudinal range, being mostly confined

to the lowlands and lower foothills, below 1,000 feet. It seems partial to the dry region about Santa Marta, being very rare at Fundación, and not detected at all on the north coast, at Don Diego or Dibulla, although present at Fonseca and Valencia, on the east side. It occurs usually in pairs or small flocks, is very tame, and has a weak, musical call-note. Like *T. crassirostris*, it is extremely fond of the fruit of the mistletoe-like plant referred to under the head of that species. The nest is described by Dr. Allen as a slight structure, suspended by the rim from the fork of a small branch, and so thin that the eggs would be partly visible from below. "The two eggs have a faintly bluish white ground-color, almost uniformly speckled all over with dots and small spots of chestnut, but with the larger spots chiefly at the larger end of the egg."⁴⁵

480. *Chlorophonia frontalis psittacina* Bangs.

Chlorophonia frontalis (not *Euphonia frontalis* Sclater) SALVIN and GODMAN, Ibis, 1879, 198, 199 (Valley of Chinchicua and San José).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, I, 1883, 253, in text (Sierra Nevada de Santa Marta, in range).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 55 (Sierra Nevada de Santa Marta and Valley of Chinchicua).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 104 (Chirua, La Concepción, and San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 80 (San Sebastian).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 170 (Onaca, Las Nubes, Valparaiso, and El Libano).—DUBOIS, Syn. Avium, I, 1901, 671 (Sierra Nevada [de Santa Marta], in range).

Chlorophonia frontalis psittacina BANGS, Proc. New England Zool. Club, III, 1902, 88 (La Concepción [type-locality] and San Sebastian; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1011 (Santa Marta localities; ref. orig. descr.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 54, in text Sierra Nevada de Santa Marta, in range; ref. orig. descr.).

⁴⁵ I have never taken the nest of this species, but it seems to me that the nest described by Dr. Allen as belonging to this bird must certainly have been wrongly identified in the field by the collector. Two species of the same genus, as closely related as *T. crassirostris* and *T. trinitatis*, could hardly build nests so entirely dissimilar. Even *Chlorophonia* builds a nest closely similar to that of *Tanagra crassirostris*.—M. A. C., Jr.

The two nests attributed to this species in the collection of the Carnegie Museum are different from that described by Dr. Allen, both being placed in a small upright branch. Compare also, in this connection, the nest described by Mr. Cherrie (*Museum Brooklyn Institute Science Bulletin*, II, 1916, 170).—W. E. C. T.

Chlorophonia psittacina SHARPE, Hand-List Birds, V, 1909, 354 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 399 (ref. orig. descr.; range).

Twenty-five specimens: Onaca, Cincinnati, Las Vegas, Pueblo Viejo, and San Miguel.

Only a few of these are adult males, the majority being females and young, characterized by their much duller coloration. It is probable that the species breeds in the immature dress; at any rate, this plumage is found in examples taken in the months of March and July. There are three individuals apparently completing the postjuvinal moult (August 11), as shown by the green feathers coming in on the throat.

Simons secured a few specimens of this handsome tanager at San José and the Valley of Chinchicua, on the south slope of the Sierra Nevada. These were females, and were referred to the Venezuelan *C. frontalis* both by Salvin and Godman and by Sclater. Mr. Brown secured a series from sundry localities on the north and south slopes of the range, enabling Mr. Bangs to discriminate the bird inhabiting this region as a distinct race from *frontalis*. The form is a sufficiently well characterized one, apparently confined to the Santa Marta region. It occurs in the Sierra Nevada between about 2,000 and 6,000 feet, but in the San Lorenzo, according to the observation of the writer, it ranges from 4,000 to 7,000 feet, although it is more common below 6,000 feet. It is strictly a forest species, and is usually seen in pairs or small parties, nearly always high up in the trees. Often it is found as a member of the bands of roaming birds in the forest, and at times coming out into the shade-trees of the coffee-haciendas. In its habits while feeding it reminds me strongly of the vireos.

Three nests of this beautiful bird were taken on the junior author's plantation, "Vista Nieve" (between Cincinnati and Las Taguas) at about 5,500 feet, on May 17, 1919. One of these was placed in a small cavity near the top of a perpendicular bank beside a flume, while the other two were in crevices of a low overhanging cliff. The sites were all in the open, in newly felled land, about one hundred yards from the edge of the forest. The nests were very similar to those of *Tanagra crassirostris*, and domed over in the same way, like that of the Oven-bird of the north. The material used in their composition is different, however, there being more dry grasses, rootlets, and leaves, and the

bamboo-grass always more or less in evidence in the nest of the former being lacking. Two of these nests contained three eggs each, while the third contained *six* eggs. All were slightly incubated. Apparently this clutch of six eggs was laid by two birds (a most unusual circumstance if correct), since it was composed of two lots of three eggs, each lot agreeing well among themselves, but differing from each other both in size and markings. The ground-color of the eggs is pure white, rather thickly and finely speckled with chestnut, more prominently at the larger end. They are very similar to those of *Tanagra crassirostris*.

Family FRINGILLIDÆ. FINCHES.

481. *Saltator striatipictus striatipictus* Lafresnaye.

Saltator albicollis (not of Vieillot) SALVIN and GODMAN, Ibis, 1880, 122 (Minca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 294 (Minca).

Saltator striatipictus BANGS, Proc. Biol. Soc. Washington, XI, 1898, 140 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 166 (Bonda and Minca).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1117 ("Santa Marta," in range).

Saltator striatipictus striatipictus BANGS and PENARD, Bull. Mus. Comp. Zoöl., LXIII, 1919, 33 ("Santa Marta," in range).

Thirteen specimens: Bonda, Valparaiso, Cincinnati, Minca, and La Tigra.

This species is subject to a great deal of variation, affecting mainly the amount and intensity of the streaking on the under parts, but it is a question if a subdivision based on this character can profitably be recognized. In any case, however, Santa Marta birds are referable to the typical form, described from western Colombia. The effect of wear is to dull the green color of the upper parts and to bring out the streaking on the under surface.

This *Saltator* has a very curious local distribution. There is absolutely no record of its occurrence in the region under discussion outside of the northern foothills of the San Lorenzo, from an altitude of about 500 up to about 4,500 feet, or through the Tropical Zone. It is most common at about 1,000 feet. It frequents open places where scattering trees are found, and in habits resembles some of the fruit-eating *Tyrannidæ*, keeping well up in the larger trees.

482. *Saltator maximus* (Müller).

Saltator magnus SALVIN and GODMAN, Ibis, 1880, 121 (Minca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 285 (Minca and Manaure).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 140 ("Santa Marta"; crit.), 178 (San Miguel and Palomina; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 166 (Onaca, Cacagualito, and Minca).

Saltator maximus VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1113 ("Santa Marta," in range).

Additional records: Santa Cruz, San Francisco, Mamarongo, La Concepción (Brown); Tucurinca (Carriker).

Twenty-five specimens: Cacagualito, Don Amo, Minca, Agua Dulce. Fundación, Don Diego, Pueblo Viejo, and Chirua.

Mr. Bangs was inclined to consider the Santa Marta bird distinct from that of Cayenne, but the present series does not disclose any peculiarities worthy of notice as compared with specimens from other parts of South America. In juvenal dress, illustrated by Nos. 9,322 (August 6) and 42,236 (June 17), the general color of the under parts is much duller, with obsolete streaks, the ochraceous of the throat is absent, and the bill is pale.

We are unable to follow Messrs. Mathews and Iredale (*Austral Avian Record*, III, 1915, 40) in changing the name of this species to *Saltator cayanus*, since Buffon's plate 205 is, in our judgment, a much better representation of the bird than is plate 616.

This is strictly a bird of the Tropical Zone, ranging over the humid part of the lowlands and the foothills up to about 3,000 feet. Mr. Brown claims to have collected it at San Miguel, but none were seen so high as that by the writer. It was most abundant at Pueblo Viejo and Fundación, frequenting the more open woodland, such as isolated groves and the fringe of trees along streams. It is solitary in its habits, and feeds almost entirely upon fruits. A nest sent in by Mr. Smith is marked as having been collected at Don Amo, August 6. It is built in the fork of an oblique branch of a large-leaved tree (*Banisteria laurifolia*), and is remarkable for the coarseness of the twigs and leaves which enter into its composition, even the lining layer being of comparatively coarse, wiry weed-stalks. The (two) eggs are like those of *S. olivascens plumbeus*, pale blue, with a ring of black spots and scrawls around the larger end.

483. *Saltator olivascens plumbeus* Bonaparte.

Saltator plumbeus BONAPARTE, Compt. Rend., XXXVII, 1853, 923 ("Santa Marta"; orig. descr.; type in coll. Paris Mus.).

Saltator olivascens (not of Cabanis) SCLATER, Proc. Zool. Soc. London, 1856, 71 ("Santa Marta"; crit.).—WYATT, Ibis, 1871, 115, 327 (Santa Marta; crit.).—SALVIN and GODMAN, Ibis, 1880, 121 (Santa Marta).—SCLATER, Cat. Birds Brit. Mus., XII, 1886, 289 (Santa Marta).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1115 ("Santa Marta," *ex* Bonaparte).

Saltator olivaceus (lapsus) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 167 (Bonda and Santa Marta); XXI, 1905, 291 (Bonda; descr. nest and eggs).

Saltator olivascens plumbeus BANGS and PENARD, Bull. Mus. Comp. Zool., LXII, 1918, 91 ("Santa Marta"; diag.).

Twenty-seven specimens: Santa Marta, Cautilito, Bonda, Cienaga, Tucurínca, Fundación, Mamatoco, Dibulla, Rio Hacha, and La Tigra.

Compared with a series from the Orinoco region and the Guiana frontier of Venezuela, doubtless correctly assumed to represent true *olivascens*, these birds are markedly duller and paler, especially below and posteriorly; the throat is whiter, less buffy; the maxillary stripe is less pronounced; and the superciliaries are also much reduced, being almost obsolete in some specimens. They represent a well-marked subspecies, to which Bonaparte's name *plumbeus*, based on a Santa Marta specimen, is of course applicable. *Saltator grandis* of Mexico and Central America, the nearest relative of *S. olivascens*, does not (so far as known at present) occur in Panama, so that there is quite a considerable gap between their respective ranges.

Several young birds in juvenal dress are included in the present series, bearing such various dates as May 6, August 13, September 28, and October 9. They are characterized by their greenish coloration above, and by their more or less streaked under parts, resembling thus *S. striatipictus*.

A Tropical Zone species, confined strictly to the coastal plain and lower edge of the foothills. It is partial to the drier portions, and was accordingly found to be most abundant at Rio Hacha. It seems to prefer second-growth woodland and the low scrub of the more arid sections. As a rule it is met with in pairs, and is quite tame. Dr. Allen describes the nests collected by Mr. Smith as "large, bulky structures, rather rudely constructed externally of sticks and plant stems, often intermixed with leaves and long strips of a broad-leaved sedge

(one nest is almost wholly composed of the latter), and lined with finer plant stems, sometimes with wire grass. The nests vary greatly in size and materials; one has a part of a letter or other manuscript, in Spanish, placed among the leaves forming the outer wall of the nest. . . . The eggs [two in number] are pale blue, with fine lines, like pen-scratches, of black, mostly confined to the larger end." They were laid in April and May.

484. *Saltator orenocensis rufescens* Todd.

Fifteen specimens: Rio Hacha.

This well-marked race was described by the writer a few years ago from three specimens collected at Tocuyo, in the State of Lara, Venezuela. With these the Rio Hacha birds agree, allowing for the fact that the latter are very much more worn, having been collected considerably later in the season (May 2-7), and are consequently not so richly colored. They have the same large bill, dark line on the sides of the pileum, and general deep coloration. Bonaparte may not have been in error after all in ascribing this species to Colombia, as intimated by the writer in describing the present form. It was found only at Rio Hacha, in the thorny scrub characteristic of the Goajira Peninsula, and is one of the species peculiar to the Arid Tropical Zone, which invades this region from west-central Venezuela.

485. *Richmondia phœnicea* (Bonaparte).

Cardinalis granadensis LAFRESNAYE, Rev. Zoöl., X, 1847, 74 (Rio Hacha; orig. descr.; type now in coll. Acad. Nat. Sci. Philadelphia).—GIEBEL, Thes. Orn., I, 1872, 578 (ref. orig. descr.; syn.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 370 (ref. orig. descr.; range).

Cardinalis phanicurus [sic] *granadensis* STONE, Proc. Acad. Nat. Sci. Philadelphia, 1899, 51 (crit. on type).

Twenty-seven specimens: Rio Hacha.

This species is the first to figure in the ornithological literature of the region under consideration, having been described by Lafresnaye in 1847 from a specimen collected at Rio Hacha, his type, which is still in a good state of preservation, having been examined in this connection, and found to agree minutely with the topotypical material collected in May, 1914, by the junior author. Lafresnaye's name was early relegated to the synonymy of *Cardinalis phœniceus* by Bonaparte (*Conspectus Avium*, I, 1850, 501), and appears to have been

overlooked or ignored by authors generally until Dr. Stone called attention to it in 1899, remarking that Mr. Ridgway considered it to stand for a race distinct from the typical *C. phœniceus* of Venezuela. Comparison of the present fine series with an equally good one from Venezuela, however, fails to disclose the slightest difference, and as we cannot regard *C. robinsoni* Richmond as a valid race the name will stand as above.

This is another representative of the Arid Tropical Zone of west-central Venezuela, entering the Santa Marta region from the northeast. It is a common bird about Rio Hacha, living in the thickets of thorny scrub and cacti, preferring the former. It is rather shy, and cannot be approached very closely. It ranges in this region as far at least as Fonseca, near the headwaters of the Rio Rancheria.

486. ***Pheucticus laubmanni*** Hellmayr and von Seilern.

Three specimens: San Miguel.

The present record considerably extends the recognized range of this recently described bird, heretofore thought to be confined to northern Venezuela. The above specimens agree in all respects with a series from that country, some of which, collected as far back as 1911, had been erroneously referred to *P. chrysogaster*. With a series from Ecuador, doubtless representing this latter form correctly, now available for comparison through the courtesy of the U. S. National Museum, it is evident that the Venezuelan and Colombian birds belong to a form which seems to be specifically distinct. The black band on the upper back, which is practically "solid" in *P. chrysogaster*, or at most slightly interrupted on the median line, is broadly streaked with golden yellow in *P. laubmanni*, showing an approach to the other form in only one specimen, a bird in high plumage from San Miguel (No. 45,178), in which the scapulars are nearly uniformly black. The white on the tail also is decidedly more restricted in the new form, and (what is of much more significance) the sexes are not certainly distinguishable in color, although the females seem to average a little duller. In both *P. chrysogaster* and its near ally, *P. chrysopheplus*, the sexes are decidedly unlike. Immature birds, of which there is one in the above series, may readily be told by their generally duller colors, with brown wings and tail.

This bird was not seen except at San Miguel, along a small stream

near our camp on the plateau east of the village, evidently having come down from the forest-covered mountainside. A single one was seen and secured on March 25, 1914, and on April 1 two more were taken in the same place. It seems to be rare, and to belong to the Subtropical Zone.

487. *Hedymeles*⁴⁶ *ludovicianus* (Linnæus).

Hedymeles ludovicianus SALVIN and GODMAN, Ibis, 1880, 122 (Minca).—SHARPE, Cat. Birds Brit. Mus., XII, 1888, 58 (Minca).

Zamelodia ludoviciana BANGS, Proc. Biol. Soc. Washington, XII, 1898, 140 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 164 (Masinga Vieja and Valparaiso).—ALLEN, Auk, XVII, 1900, 365 (Masinga Vieja and Valparaiso; Minca, *ex* Salvin and Godman; Santa Marta, *ex* Bangs; winter range).—RIDGWAY, Bull. U. S. Nat. Mus., No. 50, I, 1901, 614 (Santa Marta region, in range).

Four specimens: Cincinnati.

The dates of capture are January 10, March 18, 22, and 26. The March birds all show the prenuptial moult in progress. The single male is a young bird, completing this moult, acquiring fresh black rectrices and at least one new black primary.

A common winter visitor at Cincinnati, as well as in the lowlands and foothills, being rather more numerous in the latter. It never enters the deep forest, but keeps to the cultivated lands or open woodlands. At rare intervals the male has been heard to sing. Simons took it at Minca in January, and it was recorded by Mr. Brown at the same season of the year, and by Mr. Smith's collectors up to March 29. Ecuador appears to be the southern limit of its winter range.

488. *Oryzoborus funereus* Sclater.

Oryzoborus athiops SCLATER, Proc. Zool. Soc. London, 1860, 88 (Minca; crit.).—SCLATER, Cat. Am. Birds, 1861, 102 ("New Granada").

Oryzoborus funereus SHARPE, Cat. Birds Brit. Mus., XII, 1888, 81 (Minca).—BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 102 (Chirua and La Concepción).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 165 (Sharpe's and Bangs' references).

Oryzoborus funereus athiops HELLMAYR, Proc. Zool. Soc. London, 1911, 1098 (Santa Marta [region]; crit.).

Nineteen specimens: Minca, Pueblo Viejo, Chirua, and Heights of Chirua.

Compared with a small series (three males and four females) from

⁴⁶ Cf. Oberholser, Auk, XXXVI, 1919, 115.

British Honduras, which may safely be assumed to represent typical *O. funereus* (described from the State of Oaxaca, Mexico), the present series fail to show any such well-marked differences as are attributed to the alleged southern form *ethiops* by Mr. Hellmayr. The bill, it is true, averages a little smaller in the Santa Marta skins, but the difference is slight, while there is practically no difference of moment in general size between the two series. Variation in color among the females covers practically the same ground in both series, and is obviously due to season and age, as already indicated by Mr. Ridgway (*Bulletin United States National Museum*, No. 50, I, 1901, 605).

A species which ranges through the upper part of the Tropical Zone. Sclater recorded it from Minca many years ago, and it was found there also by the present writer, in the old cleared lands between 2,000 and 3,000 feet, but was not common. It was present also, although in small numbers, all around Pueblo Viejo and in the Chirua Valley, keeping to the edges of woodland and the shrubbery along streams. As a rule it occurs in pairs, and is very shy, remaining in the low bushes or near the ground and when flushed alighting on the tip of some dead weed or shrub.

489. **Cyanocompsa cyanoides cyanoides** (Lafresnaye).

Cyanocompsa concreta sanctæ-martæ BANGS, Proc. Biol. Soc. Washington, XII, 1898, 139 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 165 (Cacagualito; Bangs' reference).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 67 (crit.).

Guiraca cyanoides var. *sanctæ-martæ* DUBOIS, Syn. Avium, I, 1901, 612 (Santa Marta, in range; ref. orig. descr.).

Cyanocompsa sanctæ-martæ SHARPE, Hand-List Birds, V, 1909, 202 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 362 (ref. orig. descr.; range).

Additional records: Fundación (Carriker).

Twenty-six specimens: Cacagualito, Don Amo, Don Diego, La Tigra, and Minca.

Mr. Bangs calls our attention to the fact that the name *cyanoides* (Lafresnaye, 1847) is the earliest one applicable to this specific group.

Besides the above fine suite of specimens, the writer has examined Mr. Bangs' type-series, as well as Panama examples. Due allowance being made for individual and seasonal variation, which is considerable in this group, he can find no sufficient characters on which to

base the recognition of a form *sanctæ-martæ*. There is certainly no difference in general size, although the bill in the Panama birds seems to average very slightly larger, and the alleged difference in color, to which Mr. Bangs and Messrs. Hellmayr and von Seilern have called attention, breaks down completely when a sufficient series are brought together.

A species peculiar to the Tropical Zone, extending up to about 2,000 feet in the littoral and foothill region of the semi-arid section. In the humid lowlands of the north side and the west side it does not go so high, being rarely found above the coastal plain. It is rare in the "dry forest" section, but common around Don Diego and fairly so at Fundación. It is always seen in pairs, keeping to the undergrowth of the forest. It has a loud, not unmusical chirp, and is very noisy when disturbed. It is always shy and can be approached only with caution.

Two eggs from Don Amo, July 9, forwarded by Mr. Smith, are almost an exact counterpart of those of the Cardinal Grosbeak (*Richmondia cardinalis*) of the north, but are of course smaller, measuring only 22×17 . The nest is a flimsy affair of weed-stalks, small sticks, etc., lined with fine wiry weed-stalks of a reddish color.

490. *Idiospiza oreophila* (Todd).

Catamenia oreophila TODD, Proc. Biol. Soc. Washington, XXVI, 1913, 169 (San Lorenzo; orig. descr.; type in coll. Carnegie Mus.).

Six specimens: San Lorenzo and Cerro de Caracas.

Description.—Adult female (type): above dull grayish olive, streaked with clove brown, the rump and upper tail-coverts unstreaked, and with a slight brownish wash; wings dusky brown, the outer primaries narrowly margined externally with ashy gray, becoming more brownish olive on the secondaries, and buffy white on the tertiaries; wing-coverts grayish olive like the back, the greater series obscurely margined terminally with buffy; tail dusky, with grayish olive margins to the feathers; sides of head and neck, and entire under parts dull ashy gray, with a faint wash of buffy brownish on the breast and abdomen, deepening into ochraceous tawny on the under tail-coverts; throat faintly streaked with dusky; under wing-coverts dull buffy white; "iris hazel; feet dark brownish horn; bill flesh-color, tip dusky."

Male (probably not fully adult): similar to the adult female, as

above described, but darker about the head, the forehead and throat being indeed almost slaty.

Three other female examples (possibly not fully mature) differ from the type in being more strongly suffused throughout with brownish, particularly evident on the back and under parts, while the edgings of the wing-coverts and tertiaries are decidedly buffy. In juvenal dress, represented by No. 45,197, April 2, 1914, the species is rich Dresden brown above, duller and more grayish on the pileum and nape, the wings with wide external margins of deep clay-color; below the ground-color is dull buffy, deepening into clay-color on the lower abdomen and sayal brown on the under tail-coverts; and both upper and under parts are streaked with dusky black, except on the rump and under tail-coverts. The rectrices also are margined with Dresden brown.

MEASUREMENTS.

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Tarsus.
37722	[♀]	San Lorenzo	62	56	9	21
37723	♀	San Lorenzo (Type)	64	60	9	20
37927	♀	San Lorenzo	62	56	9	19.5
42531	♂ vix ad.	San Lorenzo	61	56	10	20
42565	♀	San Lorenzo	62	58	9.5	19.5
45197	♂ juv.	Cerro de Caracas	64	61	10	19.5

This species seems to find its nearest allies in *Idiospiza inornata minor* (von Berlepsch) and *I. homochroa* (Sclater), with both of which it has been carefully compared. Unfortunately it has been necessary to draw up the detailed description from the female, the only male specimen available being probably (but not certainly) not quite adult. That the present bird is distinct from both of these allied forms can scarcely be questioned in view of the differences in color and proportions which obtain. The tail is relatively longer, with broader rectrices, while the bill is less turgid than in *I. inornata minor*, and shorter than in *I. homochroa*. *I. oreophila* is moreover not nearly so heavily streaked above as either of these forms, and is intermediate between them in color (females alone considered), being paler than *I. homochroa* and darker than *I. inornata minor*.

The three forms under consideration, together with *Linaria inornata* Lafresnaye, have usually been referred to the genus *Catamenia* of Bonaparte, but that this is a mistake is evident on a merely casual

comparison. Although resembling *Catamenia analis*, the accepted type of the genus, in the general shape of the bill, they differ conspicuously in having long, narrow, acute rectrices, instead of the broad, blunt ones characteristic of *analis*, while the wing, too, is differently proportioned, the ninth (outermost) primary being shorter than the third, instead of longer. For this group a new genus, *Idiospiza*, has recently been proposed by the present writer (*Proceedings Biological Society of Washington*, XXX, 1917, 127).

This bird was found in the months of June and July on the open summit of the Cerro Quemado of San Lorenzo, between 7,500 and 8,300 feet, where the mountain was overgrown with large bromelias, grasses, and a few bushes and small shrubs. It was very scarce and difficult to secure, flushing from the thick cover only to fly far out of gunshot before again alighting. The writer expected to find it more common in the Sierra Nevada proper, but to his surprise took but a single young bird on the Cerro de Caracas at about 11,000 feet, where it was met with in company with a small flock of *Phrygilus unicolor nivarius* on April 2, 1914.

491. *Catamenia alpica* Bangs. (Plate VII.)

Catamenia sp. BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 102 (Paramo de Chiruqua).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 164 (Bangs' reference).

Catamenia alpica BANGS, Proc. New England Zool. Club, III, 1902, 89 (Paramo de Chiruqua; orig. descr.; type now in Mus. Comp. Zool.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 278 (ref. orig. descr.; syn.).—SHARPE, Hand-List Birds, V, 1909, 214 (ref. orig. descr.; range).—BRA-BOURNE and CHUBB, Birds S. Am., I, 1912, 368 (ref. orig. descr.; range).

Four specimens: Taquina, Macotama, and Paramo de Chiruqua.

Description.—Adult male: above dull slate gray, more or less washed with clay-color, especially on the lower back, and streaked with dusky, narrowly on the pileum, more broadly on the lower back, but leaving the rump and upper tail-coverts plain; wing-coverts centrally black, broadly margined with slate gray, which in the greater coverts is sometimes tinged with dull cinnamon buff; primaries dusky black, with narrow external margins of slate gray; secondaries with broader external edgings of cinnamon buff; inner margins of remiges white for most of their length; under wing-coverts dull gray; tail black, the rectrices externally edged with grayish white, and all except



Catamenia alpica Bangs

Above—Adult ♂

Below—Juvenal ♂

(Three-fourths natural size)

the two central pairs with an oblong white spot near their middle on the inner web, increasing in size from within outward; outer rectrices with slight white inner margins at their tips; under parts light neutral gray, fading to nearly white on the middle of the abdomen, and washed with dull buffy brownish, especially on the flanks; under tail-coverts rich chestnut; "iris brown; feet black, bill yellowish flesh-color, the tip black."

Immature male similar, but upper parts, secondaries, etc., much more suffused with brown, the streaks everywhere much heavier, and with remains of dusky streaks on the breast and sides. The juvenal plumage resembles that of the immature male, but the dusky streaks above are still more distinct, especially on the pileum and nape; the entire under parts are streaked with dusky on a dull buffy ground; the chestnut crissum is barely indicated; and the white spot on the outer rectrices extends to the tips of the feathers.

The adult female is as described by Mr. Bangs in the original notice of this form: wood brown above, below paler, everywhere streaked with dusky, the wings and tail as in the immature male.

MEASUREMENTS.

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Tarsus.
63540 ¹	♂	Paramo de Chiruqua	70	56	8.5	18.5
45381 ²	♂	Macotama	69	55	9	18.5
126670 ³	♂	La Mar, Cundinamarca	64	53	9	18.5
(Type of <i>Catamenia analoides schistaceifrons</i> Chapman.)						
45130 ²	♂ im.	Taquina	67	54	8	18.5
45252 ²	♂ juv.	Macotama	66	52	8.5	17.5
6248 ⁴	♀	Paramo de Chiruqua (Type) ...	66	52	8	18
130595 ³	♀	Suba, Bogotá	61	50	8	18

Through the courtesy of Mr. Bangs the type of this species has been forwarded for examination. It is certainly a very peculiar bird, the bill being very short and deep, the culmen, gonys, commissure (distally) and lateral outlines all being nearly straight, with the maxilla equal in depth to the mandible, and the exposed culmen very little

¹ Collection Academy of Natural Sciences of Philadelphia.

² Collection Carnegie Museum.

³ Collection American Museum of Natural History.

⁴ Collection E. A. and O. Bangs.

more than the depth of the bill at its base, allowing for the fact that in the skin as made up the bill is apparently not quite closed. The series at present available show some variation in all these particulars, but the discovery of the adult male serves to confirm Mr. Bangs' reference of this species to the genus *Catamenia*, with which it agrees in structural characters as well as pattern of coloration in both sexes. According to the views of the present writer *Catamenia* should be restricted (among known forms) to *C. analis* (Lafresnaye and D'Orbigny), *C. analoides* (Lafresnaye), and the present species. These agree in having the wing more rounded, the ninth (outermost) primary equal to or longer than the third, while the rectrices have blunt tips, and are relatively broader than in the other species heretofore assigned to this group. The style of coloration, too, is similar, even down to the white spot on the rectrices. *C. alpica* is clearly most nearly allied to *C. analoides*, but (in the male) is duller colored and more distinctly streaked above, less purely gray below, and with the white spot on the rectrices averaging smaller, not touching the shaft.

Catamenia analoides schistaceifrons, described by Dr. Chapman (*Bulletin American Museum of Natural History*, XXXIV, 1915, 649) from the Bogotá region of Colombia, the type and one other specimen (a female) of which have been kindly loaned by him for use in this connection, proves on comparison to be very close to, if not identical with, *C. alpica*, the male of which was naturally unknown to him at the time. Allowing for the somewhat more worn condition of this pair of birds, the measurements are practically the same, while the male differs only in the color of the bill, which is entirely pale yellow, and in having slightly more white at the base of the primaries—differences to which we are not inclined to attach very much importance. In any case, should the acquisition of additional material from the Bogotá region eventually confirm the validity of this form, it would have to stand as a subspecies of *C. alpica* instead of *C. analoides*.

The type—and heretofore the only known specimen—of this interesting species was shot by Mr. Brown on the Paramo de Chiruqua, at an altitude of 15,000 feet, on February 27, 1899, from a passing flock. By the present writer it was first taken March 29, 1914, at Taquina, in some low shrubbery along a tiny creek on the tableland. There were more individuals present, in company with other species, but they were very shy and all managed to escape except the one shot at first.

A few days later one was secured out of a small flock just above the village of Macotama in the valley. They were discovered in a small tract of shrubbery on the hillside, and after the first shot disappeared and could not be located again. A third example was shot on April 17 on the Paramo de Chiriqua at about 15,200 feet, from a flock of *Phrygilus unicolor nivarius*, and was apparently the only one there. The last was taken in the Macotama Valley at about 9,000 feet on April 20, being the only one seen at that place. All four were males, but only two were adult.

492. *Sporophila luctuosa* (Lafresnaye).

Spermophila luctuosa SALVIN and GODMAN, Ibis, 1880, 122 (San José and San Sebastian).—SHARPE, Cat. Birds Brit. Mus., XII, 1888, 136 (San Sebastian). *Sporophila luctuosa* BANGS, Proc. New England Zool. Club, I, 1899, 79 (San Sebastian and El Mamon).

So far as known at present this species is confined in this region to the south slopes of the Sierra Nevada, where it was found in 1879 by Simons, who refers to it as being "common in fields, grass, and low brambles." Mr. Brown met with it in the same place (San Sebastian), and secured three specimens. These prove to be not quite adult, having numerous brownish-tipped feathers on the back, breast, and flanks, but they agree well with examples of the same age from the interior of Colombia.

493. *Sporophila gutturalis* (Lichtenstein).

Sporophila gutturalis BANGS, Proc. Biol. Soc. Washington, XII, 1898, 179 (Palomina).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 166 (Cacagualito and Onaca).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 558 ("Santa Marta"; crit.).

Sporophila luctuosa (not *Spermophila luctuosa* Lafresnaye) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 166, excl. syn. (Masinga Vieja).

Additional records: San Francisco, La Concepción, San Miguel, Chirua (Brown).

Twenty-nine specimens: Bonda, Cacagualito, Don Diego, Don Amo, Cienaga, Mamatoco, Minca, Cincinnati, Fundación, Dibulla, and Pueblo Viejo.

Besides the above, there have been examined in this connection good series from various other sections of Colombia, and from Venezuela and Trinidad. The range of individual and seasonal variation shown is certainly excessive, and would suggest that the various alleged

rates into which the species has been divided by some authors have no real standing. Lichtenstein's type came from southern Brazil, from which country no specimens have been seen by the writer, but according to Mr. Hellmayr (*Novitates Zoologicae*, XIII, 1906, 18) birds from Trinidad are the same. These in their turn are quite indistinguishable from a series from Ocaña, Colombia, which are practical topotypes of the supposed form *pallida*, described by von Berlepsch from Bucaramanga. The fact of the matter is, that these pale-colored birds are not localized in their distribution, but are apt to occur anywhere within the range of the species. Thus, No. 72,551, Collection American Museum of Natural History, Masinga Vieja, September 7, 1899, and in perfectly fresh plumage, is so nearly white below that it was identified by Dr. Allen as *S. luctuosa*! It is very nearly matched in this respect, however, by a specimen from San Antonio, Bermudez, Venezuela (No. 73,371, Collection American Museum of Natural History), taken July 27, 1896. An uninterrupted gradation runs from these white-bellied birds up to those which are rich baryta yellow below. The upper parts too, vary even more in color than does the under surface. For example, in the Masinga Vieja skin above referred to the back is deep neutral gray, with a slight olivaceous tinge, and in the San Antonio specimen it is deep grayish olive. From this color it ranges all the way through to a Roman green. In some specimens this deep green color gives way to black, which overspreads the whole of the upper parts, including the wing-coverts, only the tips of the feathers showing green. In others the black is confined to the pileum, and in still others it is restricted to the forehead alone. It is probably this latter phase of plumage which has been described by von Berlepsch and Stolzmann under the subspecific name *inconspicua* (*Ornis*, XIII, 1905, 84), while the richly colored, yellow-bellied birds have been called *olivacea* by von Berlepsch and Taczanowski (*Proceedings Zoölogical Society of London*, 1883, 550), the respective ranges assigned being eastern Peru and western Ecuador. Although, as before stated, no material from either of these regions has been examined in this connection, it seems very unlikely that the variations shown to prevail throughout Colombia and Ecuador would turn out to be localized farther south, and unless evidence to the contrary should be forthcoming these names will have to follow *pallida* into synonymy. It is only fair to say, however, that

Mr. Hellmayr still considers *olivacea* as a valid form (*cf. Novitates Zoologicae*, XII, 1905, 278).

Males alone have been considered in the above study, but females vary almost as much.

This little seedeater is essentially a bird of the lower half of the Tropical Zone, for while it ranges from sea-level up to 4,000 feet, it is only a straggler above 2,000 feet. It is fairly common at Minca, and abundant at Fundación, but rare at Don Diego (only one pair being noted), where conditions are unfavorable. It was always seen in pairs or flocks, and usually in company with some other species of the genus, or with allied forms. It prefers tall grasses as cover rather than bushes and shrubbery, and seems to subsist almost entirely upon the seeds of these when they can be had.

The Carnegie Museum received a nest and two eggs of this species from Mr. Smith, collected at Don Amo, July 23. The nest is a small, frail affair, built entirely of fine, stiff, light-colored fibers, without special lining, and is placed in a small branch of a wild pepper bush (*Banisteria adunca*). The eggs measure about 17.5×13 ; they are white, with a faint greenish tinge, thickly covered with irregular and more or less confluent spots of brown.

494. *Sporophila minuta minuta* (Linnaeus).

Sporophila minuta ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 166 (Bonda, Onaca, and Cienaga).

Twenty-six specimens: Bonda, Don Diego, Gaira, Rio Hacha, Matatoco, Fundación, and Tucurinca.

Seasonal variation in this species is certainly very great. August males in worn breeding plumage are neutral gray above, with faint darker mottling, while a May specimen in fresh plumage is brownish olive above, with the broad and conspicuous outer margins of the tertiaries and wing-coverts isabella-color. When or how the transition from one plumage to the other takes place the series unfortunately does not show, although there are a few specimens with scattered cinnamon feathers underneath collected in both May and August, suggesting that the species may breed before attaining perfect plumage.

A Tropical Zone species, not found in the foothills, except as an occasional straggler, being practically confined to the drier portions of the coastal plain and the Magdalena basin. It was most abundant

around Tucurínca and Fundación, along the railway and in the pastures. It is rarely seen in shrubbery, preferring the tracts of tall grass, as well as roadsides and waste land generally.

However greatly Central American birds of this species may differ, as claimed by Messrs. Bangs and Penard (*Bulletin Museum of Comparative Zoölogy*, LXII, 1918, 90), we are unable to separate the above series satisfactorily from Cayenne examples.

495. *Sporophila grisea* (Gmelin).

Spermophila grisea SHARPE, Cat. Birds Brit. Mus., XII, 1888, 96 ("Santa Marta").

Sporophila grisea ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 166 (Cienaga).

Twenty-one specimens: Dibulla, Tucurínca, and Fundación.

Nearly all of the above are males, which, after making due allowance for differences of season, seem to be indistinguishable from specimens from other sections included in the range of this species. Females vary considerably more than males, but it does not seem possible to correlate these variations with definite geographic areas. Individuals with dark bills appear to be immature.

A Tropical Zone form, apparently common in the brushy pastures and waste lands between Rio Frio and Fundación, occurring at the latter place in company with *S. gutturalis* and *S. minuta*. It was abundant also at Dibulla under the same conditions, although none were taken at either Don Diego or Rio Hacha.

Sporophila sp.

Spermophila plumbea SALVIN and GODMAN, Ibis, 1880, 122 (Santa Marta).

Spermophila ocellata SHARPE, Cat. Birds Brit. Mus., XII, 1888, 130 (Santa Marta).

Sporophila plumbea colombiana ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 166 (Salvin and Godman's reference).

All of these references are based on one and the same specimen, a young bird collected by Simons at Santa Marta on April 5, 1879. Without seeing this specimen it would of course be idle to venture an opinion as to its identity, beyond suggesting that it may be *S. gutturalis*, the female of which resembles the same sex of *S. bouvronides* ("ocellata"), which in turn is very close to *S. lineola*. Even if correctly referred to the latter, it undoubtedly belongs to the race recently discriminated by the writer under the name *Sporophila lineola restricta* (*Proceedings Biological Society of Washington*, XXX, 1917, 128).

496. *Sporophila haplochroma* Todd.

Phonipara bicolor (not *Fringilla bicolor* Linnæus) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 165 (Minca; crit.).

Sporophila haplochroma TODD, Ann. Carnegie Mus., VIII, 1912, 200 (Cincinnati [type-locality] and Minca; orig. descr.; type in coll. Carnegie Mus.; meas.; crit.).

Catamenia haplochroma BRABOURNE and CHUBB, Birds S. Am., I, 1912, 368 (ref. orig. descr.; range).

Nineteen specimens: Cincinnati, Minca, and Pueblo Viejo.

There is little to add to the original account of this species, the acquisition of additional specimens having fully confirmed its characters as defined. June and July specimens are noticeably duller than those shot in March and April, and their bills average darker, but otherwise there is little variation. Messrs. Brabourne and Chubb have referred it to *Catamenia*, evidently at the suggestion of Mr. Hellmayr, whose remarks (*Novitates Zoölogicae*, XX, 1913, 237) on the proper allocation of *S. obscura*, with which it was compared in the description, should be consulted in this connection. But the writer cannot indorse such a reference in the case of either of these two species, and is of the opinion that they had better be left in *Sporophila*. In *S. haplochroma* the bill is rather more compressed than in many of the other species of this group, the lateral outlines being faintly concave, but scarcely any two of the species are exactly alike in respect to the shape of the bill, and the present form is not out of place here.

Two individuals of this inconspicuously colored seedeater were secured at Minca by Mr. Smith's collectors, and erroneously referred to "*Phonipara*" *bicolor* by Dr. Allen. It turns out that Mr. Brown secured it also, taking one specimen each at Palomina, San Francisco, and La Concepción, these examples being doubtfully identified by Mr. Bangs as *S. gutturalis*, but the records were not published at the time.

It was first seen by the writer at the hacienda Cincinnati in June, 1911, where it was found frequenting the edge of the forest, and in the new clearings. Only one small flock was seen, from which three specimens were eventually secured. Later it was found at Minca, but was very scarce, being noted in company with *Oryzoborus funereus* and other species of seedeaters, but keeping to the ground more than any of the latter. It was present also, although only in small numbers, around Pueblo Viejo and in the Chirua Valley. It is thus a species not known to go beyond the Tropical Zone in this region.

It may be added that recent researches have shown that this species is not confined to the Santa Marta region, as at first supposed, but has an extensive range in Colombia and Venezuela.

497. *Tiaris bicolor omissa* (Jardine).

Eleven specimens: Rio Hacha.

Allowing for differences in season and degree of wear, this series agree well with another from Porto Rico, running through precisely the same variations in plumage, and also with specimens from northern Venezuela. Typical Tobago skins have not been compared, however, nor have any been examined from the interior of Colombia. Coming as they do from a different faunal area, the latter may be distinct. In the Santa Marta region the species was met with only in the vicinity of Rio Hacha, where it was wont to frequent the more open places in the thorny scrub-growth, keeping on or near the ground, and at Fonseca. Like *Coryphospingus pileatus brevicaudus*, *Richmondia phænicea*, *Saltator orenocensis rufescens*, etc., it seems to be a representative of the Arid Tropical Zone of northern Venezuela.

498. *Volatinia jacarini atronitens* Todd.

Volatinia jacarini (not *Tanagra jacarini* Linnæus) SALVIN and GODMAN, Ibis, 1879, 200 (San José).—SHARPE, Cat. Birds Brit. Mus., XII, 1888, 152 (San José).

Volatinia jacarini splendens (not *Fringilla splendens* Vieillot) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 139 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 165 (Bonda, Onaca, Masinga Vieja, and Cacagualito); XXI, 1905, 291 (Bonda; descr. nest and eggs).

Additional records: Chirua, La Concepción (Brown); Don Amo (Smith).

Twenty-three specimens: Bonda, Don Diego, Santa Marta, Cincinnati, La Tigrera, Minca, and Mamatoco.

On the name of this species compare Todd, *Proceedings Biological Society of Washington*, XXXIII, 1920, 73.

This species is found in all localities under 2,500 feet where waste lands, grass-lands, or savannas exist, but on the west slopes of the San Lorenzo it straggles up to 4,000 feet. It was not noted by the writer much above 2,000 feet in the Sierra Nevada proper, but Simons secured a single specimen at San José, at an altitude of 5,000 feet. In habits it is very similar to the species of *Sporophila*, with which

it is usually found in company. Two nests sent in from Bonda by Mr. Smith are described by Dr. Allen as "deeply cup-shaped, compactly woven of fine plant fibers and lined with finer material of the same character." Both were placed in the fork of a small branch. "The eggs [two in number] are pale bluish white, in one set nearly clear white, sprinkled with small spots of reddish chestnut, massed chiefly around the greater end." The dates represented are May 6 and June 2.

499. *Sicalis citrina browni* Bangs.

Sycalis browni BANGS, Proc. Biol. Soc. Washington, XII, 1898, 139 ("Santa Marta"; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.); XIII, 1899, 102 (Palomina and La Concepción; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 165 (Bangs' references).

Pseudochloris citrina (not *Sycalis citrina* von Pelzeln) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 163 (Onaca).

Sycalis columbiana var. *browni* DUBOIS, Syn. Avium, I, 1901, 601 ("Santa Marta," in range; ref. orig. descr.).

Pseudochloris browni SHARPE, Hand-List Birds, V, 1909, 326 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 381 (ref. orig. descr.; range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 572, in text (Onaca; crit.).

Twenty-seven specimens: Onaca, Minca, and San Miguel.

The writer is not prepared to recognize a genus *Pseudochloris* to include this and related species, as is done by Sharpe. Mr. Bangs described this form under the impression that it was a true *Sicalis*, but discovered later that it was probably the same as Colombian specimens of the bird called by Sharpe *Pseudochloris citrina* (von Pelzeln). Brazil being the type-locality for the name in question, Mr. Bangs suggested that it was possible that the northern birds might prove separable, in which case the name he had given would hold. No topotypical material has been available in this connection, but a few years ago a specimen of *browni* from La Cumbre, Venezuela, was sent to Mr. Hellmayr with a request to make the indicated comparison. He writes as follows: "This is an exceedingly poor subspecies of *Pseudochloris citrina* from Brazil, and in reality may not be separable at all. Some time ago I compared a good series from northern localities (Bogotá and the mountains of British Guiana) with von Pelzeln's types, borrowed from the Vienna Museum, and could not discover the slightest differences in coloration. Your bird from La Cumbre is practically identical with the one from Bogotá in this Museum, which,

in its turn, is not distinguishable from Guiana skins. I am perfectly convinced that the birds inhabiting Guiana, Venezuela, and Colombia belong to one and the same form, entitled to the name *browni*. But whether they are different from *P. citrina*, of eastern Brazil, appears extremely doubtful. Compared with three males from Brazil (including the types), the northern birds are slightly smaller, with shorter tails, and somewhat slenderer, shorter bills. It may be, too, that the ear-coverts are more greenish, and the under parts a deeper, purer yellow. However, a larger series of the typical race should be examined. Furthermore, the name *Orosolina pratensis* Cabanis (from Tucuman) may be an earlier one for *browni*, for the single (not quite adult) male from Argentina more nearly agrees with the northern race in proportions."

MEASUREMENTS (*vide* Hellmayr).

	Wing.	Tail.	Bill.
Two males from Jaguaraiba, S. Brazil (types of <i>Sycalis citrina</i>)	68	50-51.5	9-9.5
One adult male from Gilboez, Piahy, N. E. Brazil...	67	50	9.5
Five adult males from Mt. Roraima, British Guiana..	62-65.5	43.5-47	8-9
One adult male from La Cumbre, Venezuela.....	65.5	46	9
Two adult males from Bogotá, Colombia.....	65-67	47	9.5

It will thus be seen that the name *browni* rests on a very slender basis indeed, but pending the receipt of a series of Brazilian examples it may be allowed to stand provisionally. In a series of males secured at Minca from June 17 to 26, 1913, two phases of coloration are represented. Some are decidedly grayish above, while in others the back is almost as bright olive yellow as the crown.

This bird is found throughout the foothills and mountain slopes up to 6,000 feet, wherever grass-lands or savannas occur. It has been seen in the little bits of savanna along the road to Cincinnati, between Mamatoco and Minca, but it is not at all common there. While collecting at Minca the writer was so fortunate as to find a considerable flock feeding in a tract of recently cleared level land in the valley, though their normal habitat in that vicinity was evidently some grass-covered hills near by known as the "Cueva de Tigre." The birds are extremely shy, flushing at the slightest provocation, and flying far and high. Their flight is Goldfinch-like, but rather stronger. In their habits they remind one a great deal of the Longspurs, alighting almost

always on the ground, where they run about in search of seeds. They have a low, chirping call-note. Only one flock, from which but one bird was secured, was found in the Sierra Nevada, on the mountain-side between San Miguel and Taquina. Mr. Brown most probably secured his specimens in the grassy hills near Onaca.

500. *Sicalis flaveola flaveola* (Linnæus).

Sycalis brasiliensis WYATT, Ibis, 1871, 115, 328 (Santa Marta).

Sycalis flaveola SCLATER, Ibis, 1872, 41 (Santa Marta, *ex* Wyatt; crit.).—SALVIN and GODMAN, Ibis, 1880, 123 (Santa Marta).—SHARPE, Cat. Birds Brit. Mus., XII, 1888, 377 (Santa Marta).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 165 (Bonda, Cienaga, and Cacagualito).

Sicalis flaveola CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 565 "Santa Marta").

Additional records: Tucurinca (Carriker).

Thirty-one specimens: Bonda, Cienaga, Rio Hacha, Gaira, Mamato, and Fundación.

There can be no question that the adult female of this species is like the adult male, averaging merely a little duller in color, but often quite indistinguishable. In first nuptial dress both sexes are much duller, the pileum and back shaded with ashy, and the under parts ashy white, with a band of dull yellow across the breast. This is the plumage attributed to the adult female by Sharpe, although not without qualification. Not one of the extensive series of adults examined shows any indication of streaking on the flanks.

This beautiful finch was met with both by Wyatt and by Simons in the immediate vicinity of Santa Marta, the latter author remarking that it was common near houses and in gardens, and very tame. It appears to be a species of the Lower Tropical Zone, being confined to the lowlands, and most numerous in the semi-arid portions. It was fairly common about Fundación, and quite numerous at Rio Hacha, while a few were noted at Fonseca and Valencia, but none at either Don Diego or Dibulla. It is a bird of the more open country, being partial to shrubbery and scattered tree-growth, and occurs usually in pairs, small flocks, or family groups.

501. *Phrygilus unicolor nivarius* (Bangs).

Phrygilus unicolor (not *Emberiza unicolor* D'Orbigny and Lafresnaye) SALVIN and GODMAN, Ibis, 1880, 122 (Sierra Nevada de Santa Marta, 9,200 to 12,800 feet; crit.).—SHARPE, Cat. Birds Brit. Mus., XII, 1888, 792 (Sierra Nevada de Santa Marta).

Haplospiza nivaria BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 102 (Paramo de Chiruqua; orig. descr.; type now in coll. Mus. Comp. Zool.; meas.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 164 (Salvin and Godman's and Bangs' references).—DUBOIS, Syn. Avium, I, 1901, 627 (ref. orig. descr.; range).—SHARPE, Hand-List Birds, V, 1909, 329 (ref. orig. descr.; range).

Phrygilus nivarius BRABOURNE and CHUBB, Birds S. Am., I, 1912, 382 (ref. orig. descr.; range).

Phrygilus unicolor nivarius CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXIV, 1915, 652 (Paramo de Chiruqua; diag.; meas.; crit.).

Fifty-three specimens: Cerro de Caracas, Paramo de Mamarongo, and Paramo de Chiruqua.

Little variation is apparent in this fine series, except such as is due to age and sex, young males being streaked like the adult females. A young male dated April 4 is moulting from this streaked plumage into that of the adult. The two adults shot on April 2 are much worn, but those taken later in the month are in fresh dress.

The first specimens of this bird, secured by Simons in 1878, were referred by Salvin and Godman to *Phrygilus unicolor* (D'Orbigny and Lafresnaye), a species which they admitted was variable according to locality. When Mr. Brown's series came to hand, however, Mr. Bangs described the bird represented under the name *Haplospiza nivaria*, comparing it with *Haplospiza unicolor* Cabanis, with which it has clearly nothing whatever to do, being in fact much more closely related to *Phrygilus unicolor*, an entirely different bird, as correctly given by Salvin and Godman in the first place. This curious but not entirely inexcusable mistake by Mr. Bangs has unfortunately been followed by Sharpe in his *Hand-List of the Genera and Species of Birds*, as well as by Mr. Riley in describing a supposed new form (*montosa*) from the Andes of Merida, but which according to Dr. Chapman is the same as the present bird. Dr. Chapman goes on to point out that this and related forms are apparently not congeneric with the type of *Phrygilus* (*P. gayi*)—a conclusion which the writer had already reached independently—and suggests that eventually it will be necessary to segregate them under Bonaparte's name *Geospizopsis*.

This is one of the characteristic species of the Paramo or Alpine Zone in the Sierra Nevada de Santa Marta, its long, lax plumage fitting it to withstand the cold of these high altitudes. Simons secured five

specimens at from 9,200 to 12,800 feet in July, and Mr. Brown collected a series of thirteen on the Paramo de Chiriqua, at the edge of the snow (15,000 feet), in February and March. According to the writer's experience it is a fairly abundant bird, as abundance goes at these altitudes, where bird-life in general is so scarce. It was first detected on the Cerro de Caracas early in April, a small flock being encountered on each of the two trips made. A small flock was also found on the Paramo de Mamarongo at about 10,000 or 11,000 feet, and a series secured. It was most abundant on the Paramo de Chiriqua above 12,000 feet, ranging thence as high as 15,000 feet or more, being in fact practically the only bird present in the desolate wastes of the mountain along the snow-line. It is very shy, the flocks scattering widely in all directions at the first shot, and the birds hiding so cleverly beside some stone or tuft of grass as to elude observation completely, until they unexpectedly take wing, not alighting again for a long distance, and flying in long graceful sweeps, after the manner of the American Goldfinch.

502. **Buarremon basilicus** Bangs.

Buarremon basilicus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 159 (Pueblo Viejo; orig. descr.; type now in Mus. Comp. Zool.; meas.; crit.); XIII, 1899, 104 (Chirua and San Francisco; plum.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 167 (Valparaiso and El Libano).—DUBOIS, Syn. Avium, I, 1901, 647 (ref. orig. descr.; range).—SHARPE, Hand-List Birds, V, 1909, 336 (ref. orig. descr.; range).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1103 (Santa Marta localities; ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 390 (ref. orig. descr.; range).

* Twenty-five specimens: El Libano, Cincinnati, San Lorenzo, Paramo de Mamarongo, Pueblo Viejo, and Heights of Chirua.

Judging from the description alone (in one case) this species, the range of which is restricted to the present region, must be very close to *Buarremon poliophrys* of central Peru, notwithstanding its wide separation therefrom geographically. It is quite distinct from, although closely related to, *B. phaeopleurus* of northern Venezuela. It was described by Mr. Bangs from a single specimen collected by Mr. Brown at Pueblo Viejo. Later four other specimens were secured in the same general region, at Chirua and San Francisco. Mr. Smith extended its range to the San Lorenzo, securing specimens at Valparaiso (now Cincinnati) and El Libano. In this section it ranges

from 5,000 to 8,000 feet in the heavy Subtropical Zone forest, but in the Sierra Nevada proper it is found as low as 2,000 feet, and as high as 9,000 feet. It is not a common bird anywhere, however, and its habits tend to make it inconspicuous. It keeps near the ground, spending most of its time scratching about among the leaves and rubbish, like the Towhee of the eastern United States. It is invariably seen in pairs.

An example in juvenal dress (No. 63,230, Academy of Natural Sciences of Philadelphia, March 19) is much browner above than the adult, with the pileum like the back, the stripes scarcely indicated; below it is sepia brown, obscurely streaked with dusky brown, especially on the throat, breast, and middle of the abdomen; the bill also is duller colored. Two other specimens, collected July 12 and 25, are similar, but the postjuvenal moult is just beginning.

503. *Atlapetes melanocephalus* (Salvin and Godman).

Buarremon melanocephalus SALVIN and GODMAN, Ibis, 1880, 121 (San Sebastian; orig. descr.; type now in coll. Brit. Mus.; crit.).—REICHENOW and SCHALOW, Journ. f. Orn., XXVIII, 1880, 322 (reprint orig. descr.).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 261 (San Sebastian and San José; descr.).—SALVIN, Ibis, 1887, 130, in text (range).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 178 (San Miguel, Palomina, and San Francisco; descr. young).—BANGS, Proc. New England Zool. Club, I, 1899, 79 (San Sebastian and El Mamón).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 120, 167 (Las Nubes, Valparaiso, and El Libano).—DUBOIS, Syn. Avium, I, 1901, 648 (Sierra Nevada de Santa Marta, in range; ref. orig. descr.).—SHARPE, Hand-List Birds, V, 1909, 337 (Santa Marta [region], in range).

Atlapetes melanocephalus VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1097 (Santa Marta localities; ref. orig. descr.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 387 (ref. orig. descr.; range).

Additional records: La Concepción, Chirua, Paramo de Chiriqua (?), Santa Cruz (Brown).

Twenty-eight specimens: El Libano, Las Vegas, Cincinnati, Pueblo Viejo, San Lorenzo, Las Taguas, and Sierra Nevada de Santa Marta (6,000 and 8,000 feet).

In juvenal plumage, illustrated by No. 37,695, the color-pattern closely resembles that of the adult, but the colors are duller and paler. The upper parts are more brownish, with less contrast between the back and the pileum, while the under parts are dull buffy yellow, narrowly streaked with dusky from the breast down. This bird was taken

on June 8; another in a similar stage is dated July 7, while a third shot June 11 is entering upon the postjuvenile moult. Several of the presumably adult birds show more or less dusky mottling on the breast, and there is also a tendency towards a dusky suffusion on the back.

One of the species peculiar to this region, having been described by Salvin and Godman from a young bird secured by Simons at San Sebastian. This collector subsequently took an adult at San José, and the species continued to be known only from these two specimens up to the time Mr. Brown visited the Sierra Nevada, when a good series was secured, including examples from the type-locality. Mr. Smith's collectors found it also in the San Lorenzo range, and it appears to be a common bird in both districts. It is a Subtropical Zone form, not found below 4,000 feet in the San Lorenzo district, but coming down as low as 2,000 feet on the north slopes of the Sierra Nevada, at Pueblo Viejo. It runs as high up as 8,000 feet in the San Lorenzo, and to about the same altitude in the Sierra Nevada, although above 6,000 feet it is not so common there, the temperature being much lower than at corresponding altitudes on the former mountain. It occurs under almost all kinds of conditions throughout its range—in the forest, in scrub-growth, and even in low bushes in the open. It is invariably found in pairs, keeping near the ground, and is not at all shy. The nest is made of grass and rootlets, domed over, and placed in a low bush or shrub. The eggs are two in number, and pure white.

504. **Arremon schlegeli** Bonaparte.

Arremon schlegeli SCLATER, Proc. Zool. Soc. London, 1856, 83 ("Santa Marta").—SCLATER, Cat. Am. Birds, 1861, 93 ("Santa Marta").—SALVIN and GODMAN, Ibis, 1880, 121 (Minca).—SCLATER, Cat. Birds Brit. Mus., XI, 1886, 279 (Minca).—BANGS, Proc. Biol. Soc. Washington, XII, 1898, 140 ("Santa Marta"), 178 (Palomina and San Miguel).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 167 (Bonda, Minca, Onaca, and Valparaiso).—VON BERLEPSCH, Verh. V. Int. Orn.-Kong., 1911, 1107 (Santa Marta designated as type-locality; Santa Marta localities).

Additional records: La Concepción, Chirua (Brown).

Thirty-one specimens: Onaca, Cacagualito, Mamatoco, Agua Dulce, Minca, Las Vegas, Pueblo Viejo, and La Tigra.

There is considerable variation, apparently of an individual nature, in the brightness of the olive yellow of the back and wing-coverts. No. 38,090, August 16, is apparently just completing the postjuvenile

moult, and still retains traces of greenish feathers on the posterior under parts, while the bill is wholly dark. No. 42,353, June 24, is in juvenal dress, which resembles that of the adult above, but the gray of the upper back is wanting, the whole back being suffused with olive, much brighter posteriorly. The wings and tail are as in the adult. Below, the general color is dull whitish, obscurely streaked with dusky, the breast and flanks shaded with buffy olive, with the black areas on either side of the throat indicated, and the abdomen tinged with pale yellow. The bill is black, instead of yellow, as in the adult.

This species was described by Bonaparte (*ex* Lafresnaye, MS.) in 1850, from "Am[erica] m[eridionalis]," and a specimen purporting to come from Santa Marta was received by Sclater from Verreaux shortly thereafter. Salvin and Godman recorded it from Minca, and it is represented from various localities in all the collections made in more recent years. It is essentially a bird of the foothills section of the Tropical Zone, ranging from their lower edge up to 3,000 feet, but may occasionally straggle beyond these bounds. Mr. Brown, indeed, claims to have secured it at La Concepción, Chirua, Palomina, and San Miguel, but by the writer it was found to be very rare in the main Sierras. Only two specimens were taken at Pueblo Viejo, and a few others seen. It was common, however, at Loma Larga, at the eastern end of the range. It is very partial to the "dry forest" of the semi-arid belt, but was not noted anywhere in the heavy forest between Santa Marta and Dibulla, nor at Fundación. It keeps near the ground in the thickets, and has a weak chirp, but no song. It is always seen in pairs, actively hopping about in the bushes or on the ground, very much after the manner of *Buarremon basilicus*.

The known range of this species extends west along the coast as far at least as Cartagena, and it occurs also near Caracas, Venezuela, although there are no published records from the intermediate region. Santa Marta has been proposed as the type-locality by von Berlepsch, but whether on the basis of the original specimen it is at present impossible to say.

505. **Arremonops conirostris conirostris** Bonaparte.

Arremon conirostris SCLATER, Proc. Zool. Soc. London, 1855, 154 ("Santa Marta").

Embernagra conirostris SCLATER, Cat. Am. Birds, 1861, 117 ("Santa Marta").

—SALVIN and GODMAN, Ibis, 1880, 123 ("Santa Marta").—SHARPE, Cat. Birds Brit. Mus., XII, 1888, 763 ("Santa Marta").



FIG. 1. Foothill Region (dry forest) on road to Minca 1,500 ft. above sea-level.



FIG. 2. Ordinary lower Subtropical forest, 6,000 ft. above sea-level.

- Arremonops conirostris canens* BANGS, Proc. Biol. Soc. Washington, XII, 1898, 140 ("Santa Marta"; orig. descr.; type now in Mus. Comp. Zoöl.; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XXI, 1905, 291 (Bonda; descr. nest and eggs).
- Arremonops canens* BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 103 (crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 164 (Salvin and Godman's and Bangs' references).—SHARPE, Hand-List Birds, V, 1909, 323 (ref. orig. descr.; range).
- Arremonops venezuelensis* BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 104 ("Santa Marta"; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 163 (Bonda).
- Buarremon assimilis* (not *Tanagra assimilis* Boissonneau) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 167 (Bonda; plum.); XXI, 1905, 276 (crit.;= *Arremonops conirostris canens* Bangs).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 160, in text (Bonda).
- Embernagra striaticeps* var. *canens* DUBOIS, Syn. Avium, I, 1901, 638 ("Santa Marta," in range; ref. orig. descr.).
- Arremonops conirostris venezuelensis* TODD, Ann. Carnegie Mus., VIII, 1912, 199, in text (Santa Marta region; crit.).—HELLMAYR and VON SEILERN, Arch. f. Naturg., LXXVIII, 1912, 69 (Santa Marta region, in range).
- Arremonops conirostris conirostris* CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 569 ("Santa Marta"; meas.; crit.).

Ten specimens: Bonda, Dibulla, Mamatoco, Tucurinca, and Loma Larga.

Sclater was the first to record this species from the Santa Marta region, his record being based on a specimen secured through Verreaux. Simons secured a specimen also, which was duly recorded by Salvin and Godman. Mr. Brown sent in three specimens, labelled "Santa Marta," but which probably came from the vicinity of Bonda, as explained elsewhere. These were described by Mr. Bangs as a new race, *canens*, on the grounds of differences in size and coloration as compared with true *conirostris*. The following year he was led to restrict the name *canens* to apply only to the type, referring the two female specimens to *venezuelensis*, a form described by Mr. Ridgway only a few months before the publication of *canens*. As shown by the present writer a few years ago, however, it is practically certain that the peculiarities of the type-specimen of the latter are individual in their character. With a series of seventy-one specimens from various parts of Colombia and Venezuela available for study, a great deal of variation is noticeable, but it is individual and seasonal, certainly not geographical. Some specimens are decidedly grayish above, others incline more

to olivaceous. The gray color of the crown, superciliaries, and under parts also varies greatly in depth and purity, as well as the buffy shading of the flanks and crissum. Nor are there any real average differences in size in birds from various parts of the range of the species. Bonaparte states that his *Arremon conirostris* came from "Brazil," but this was obviously an error, and Messrs. Hellmayr and von Seilern have recently fixed Bogotá as the type-locality. Birds from this region, contrary to the implication of these authors, prove to be quite indistinguishable from the rest of the series examined, which includes specimens coming from the type-locality of *venezuelensis*. Accordingly, as suspected by the writer for some time, this name will fall as a pure synonym of *conirostris*. *Arremonops conirostris inexpectatus*, recently described by Dr. Chapman from Andalucia, Huila, Colombia, and which has been examined in this connection, proves to be an easily recognizable geographical variant of *conirostris*. *Arremonops chrysoma*, however, would seem to be specifically distinct, and it is further to be remarked that the Central American form of this restricted group, *Arremonops richmondi*, is certainly far more closely related to the latter than to *conirostris*, despite the gap between their respective ranges.

In the Santa Marta region *Arremonops conirostris conirostris* evidently inhabits the whole of the littoral Tropical Zone, from the Magdalena on the west as far as Dibulla and Loma Larga to the east. It is a rare bird, especially so in the dry portion of the coastal plain, where it is found only in the irrigated pastures, etc. Specimens collected at Bonda by Mr. Smith were at first erroneously referred to *Buarremon assimilis* by Dr. Allen, but this mistake was corrected later. Dr. Allen has also described the nest and eggs of the species, forwarded by the same collector. These were all from Bonda, under dates ranging from April 18 to May 4, and contained two eggs each, pure white in color. "The nests, bulky and deeply cup-shaped, are placed in the fork of a branch, and differ much in the materials of which they are constructed. One is composed outwardly of dead leaves, lined with plant stems and fine tendrils of some vine. Another is composed outwardly and also lined with pieces of broad leaves of some sedge or flag, mixed with plant stems, the latter forming a sort of middle layer. Another is composed externally of fine grass leaves, and internally of broad blades of grass or sedge and fine plant fibers.

In position, form, and in general structure the four nests are all very similar. Their external diameter is about 5 inches, internal about 3; depth externally 4 inches, depth of cavity about $2\frac{1}{2}$ inches."

506. *Arremonops tocuyensis* Todd.

Eleven specimens: Rio Hacha and Arroya de Arenas.

The present species was described by the senior author a few years ago (ANNALS CARNEGIE MUSEUM, VIII, 1912, 198), from a single specimen collected at Tocuyo, southwest of Barquisimeto, Venezuela. The capture of additional specimens is thus doubly gratifying, confirming as it does the validity of the new form and materially extending its range. The present series are a little grayer above than the type, doubtless due to season, but are obviously the same. The species is perfectly distinct from *A. conirostris*, for while the under parts are about the same in color, the upper surface is much paler and grayer, the pileum and sides of the head are also paler gray, the lateral crown-stripes and postorbital stripes are browner (approaching thus *A. superciliosus*), and the size is much less, as indicated by the following table of measurements:

No.	Sex.	Locality.	Wing.	Tail.	Bill.	Tarsus.
36569	♂	Tocuyo, Venezuela (Type)	72	56	15	22
45609	♂	Rio Hacha, Colombia	67	53	14	23
45610	♂	Rio Hacha, Colombia	65	52	14	21.5
45612	♂	Rio Hacha, Colombia	66	56.5	13.5	21
45666	♂	Rio Hacha, Colombia	61	48	13.5	22
45608	♀	Rio Hacha, Colombia	62	54	13.5	21
45611	♀	Rio Hacha, Colombia	61	49	13.5	20.5
45632	♀	Rio Hacha, Colombia	61	47	14	21

This sparrow is a fairly common bird in the scrub around Rio Hacha, where nine specimens were taken in three days' collecting. It is a typical representative of the Tropical Zone fauna of the arid central plateau region of west-central Venezuela, which extends across the Gulf of Venezuela to the Goajira Peninsula.

507. *Coryphospingus pileatus brevicaudus* Cory.

Twenty-five specimens: Dibulla, Rio Hacha, Fonseca, and Valencia.

All the females are more or less distinctly streaked below—a character not mentioned by Sharpe (*Catalogue of the Birds in the British Museum*, XII, 1888, 804) in his description. One even has a touch of

red on the crown. No. 44,657, February 21, is a young male in post-juvenal moult, the black and red feathers of the pileum coming in. The series is absolutely identical with another from the Orinoco region and the State of Lara in Venezuela, and agrees as well with the type of *brevicaudus* from Margarita Island. This form differs from typical *pileatus* from Brazil in smaller size and whiteness of the loreal region.

A rare bird at Dibulla, where but a single (young) example was secured, but abundant around Rio Hacha, where it was found in all kinds of cover, though keeping rather close to the ground as a rule. It is inclined to be gregarious, and is usually met with in pairs or family groups. So far at least as the Santa Marta region is concerned, it is apparently confined to the Arid Tropical Zone, which invades this district from the Goajira Peninsula to the northeast.

508. *Emberizoides herbicola sphenurus* (Vieillot).

Emberizoides macrourus (not *Fringilla macroura* Pallas) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 141 ("Santa Marta"; crit.), 179 (San Miguel, Macotama, and Palomina; crit.).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 163 (Bangs' references).

Emberizoides herbicola sphenurus HELLMAYR, Abhand. K. Bayerischen Akad. Wiss., Math.-phys. Kl., XXVI, 1912, 105, in text (Santa Marta [region], in range).

Additional records: La Concepción (Brown).

Thirteen specimens: Pueblo Viejo, Chirua, Heights of Chirua, and San Miguel.

A series of seven adult males from Venezuela and Colombia, selected for the unworn condition of their plumage, measure as follows: wing, 68–73; tail, 95–104; bill, 13.5–14; tarsus, 22.5–25. Bolivian specimens in comparable condition, and assumed to represent true *herbicola* (described from Paraguay), measure: wing, 76–78.5; tail, 108–114; bill, 13.5–14.5; tarsus, 24–26. There is thus a slight but appreciable difference in size between the two South American races of this species. In color *sphenurus* is darker than *herbicola*, the back with less sulphine yellow suffusion; the rump and upper tail-coverts are duller, Brussels brown or raw umber, rather than Dresden or buckthorn brown; the wings externally are yellowish citrine rather than sulphine yellow; and the under parts, too, are darker and less uniform. Only two of the entire series of adults show any trace whatever of streaks on the

under tail-coverts, as described by Sharpe and others. Mr. Bangs even intimates that Santa Marta skins may be different from typical Cayenne examples—a matter which the writer is unable to discuss. Nos. 44,903-4, March 9, and 44,992, March 16, are evidently in juvenal dress, being strongly tinged with amber yellow below and isabella-color above, with the sides, flanks, and under tail-coverts more or less distinctly streaked with dusky brown.

In Costa Rica and Venezuela the writer found this bird in the savannas below 1,000 feet, but in the Santa Marta region it seems not to come lower than 2,000 feet (Pueblo Viejo), ranging thence up to 6,000 feet, or from the higher part of the Tropical well into the Subtropical Zone. The locality "Santa Marta" quoted by Mr. Bangs is of course an obvious error. It is found only in the tall thick grass of the open savannas, and is very shy and hard to flush, except early in the morning or just after a shower.

509. *Brachyspiza capensis peruviana* (Lesson).

Zonotrichia pileata (not *Emberiza pileata* Boddaert) SALVIN and GODMAN, Ibis, 1879, 200 (Atanquez); 1880, 122 (San Sebastian and Sierra Nevada de Santa Marta; food).—SHARPE, Cat. Birds Brit. Mus., XII, 1888, 610 (San Sebastian, Atanquez, and Sierra Nevada de Santa Marta).

Brachyspiza capensis peruviana BANGS, Proc. Biol. Soc. Washington, XII, 1898, 178 (San Miguel).—BANGS, Proc. New England Zool. Club, I, 1899, 79 (San Sebastian and El Mamon).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 164 (Salvin and Godman's and Bangs' references).

Additional records: La Concepción, Paramo de Macotama (Brown).

Fourteen specimens: San Lorenzo, Chirua, San Miguel, Cerro de Caracas, and Macotama.

The series collected agree well with birds from Costa Rica and northern Venezuela, although the flanks are perhaps a trifle paler brown than in the latter. No. 42,528, San Lorenzo, July 19, is unusually dark and rufescent above.

An abundant species throughout the Temperate Zone in this region, wherever the proper conditions obtain, and descending at intervals to the Subtropical Zone. On the San Lorenzo it is not found below 8,000 feet, but in the Macotama Valley is common down to 5,000 feet. One specimen was even taken in the Chirua Valley as low down as 3,500 feet, but this is very unusual. It is partial to the open country, where there are scattered bushes and stunted shrubbery, avoiding the forest

entirely. It is inclined to be shy, hiding away very cleverly, and not a few individuals were shot by mistake, under the impression that they were some other species, skulking in the grass or little bushes. When undisturbed the male will often perch on the tip of a shrub or bush and sing his queer little unmusical song. One nest was noted on the San Lorenzo on December 20, placed on the ground at the base of a small bush on an open ridge. (For a further account of the nesting habits of this species see Carriker, ANNALS CARNEGIE MUSEUM, VI, 1910, 906.)

The extraordinary thing about the range of this bird is that a closely related form, *Brachyspiza capensis insularis*, occurs on the island of Curaçao practically at sea-level. An explanation of this circumstance has already been given (see page 94).

510. *Myospiza humeralis meridana* Todd.

Myospiza manimbe (not *Fringilla manimbe* Lichtenstein) BANGS, Proc. Biol. Soc. Washington, XIII, 1899, 103 (Paramo de Macotama).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 164 (Bonda).

Myospiza manimbe columbiana CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 162, part (? "Santa Marta"; crit.).

One specimen: Taquina.

For the common and widely distributed South American sparrow long known as *Myospiza manimbe* (Lichtenstein) an earlier name, *Tanagra humeralis* of Bosc (*Choix de Memoires*, II, 1792, 179, pl. 34, fig. 4), has lately been made known by Mr. Charles Chubb (*Bulletin British Ornithologists' Club*, XXXI, 1913, 39). It appears to be divisible into several fairly well-marked geographic races, as intimated by Dr. Chapman, who has separated the bird of western Colombia under the subspecific name *columbiana*, Santa Marta examples being considered intermediates. The latter, however, agree much better with the series examined from northern Venezuela, recently discriminated by the present writer as a distinct race, *meridana* (*Proceedings Biological Society of Washington*, XXX, 1917, 127), characterized by its generally darker, browner coloration as compared with true *humeralis*, while in *columbiana* black is the prevailing tone of the upper parts. Care must of course be used to compare series in fresh plumage, as wear produces great changes in the appearance of the feathers. The Taquina specimen above recorded (dated April 9), while somewhat worn, still shows the characters of *meridana* at their extreme, as also does the specimen secured by Mr. Brown, which is in fresh plumage.

Careful search was made by the writer for this species, already well known to him, during the whole of his collecting in the Sierra Nevada, but only one individual was ever certainly identified. This was shot on the mountainside to the east of Taquina, at about 7,000 feet. Mr. Brown procured a single example on the Paramo de Macotama, at 9,000 feet. Mr. Smith took two specimens, which were labelled as coming from Bonda. They were doubtless taken on the grass-covered hills above that village, at an altitude of 2,000 feet or more. The species normally belongs to the Tropical Zone, but is one of those which tends to push its range upward whenever suitable conditions of habitat obtain.

511. *Spiza americana* (Gmelin).

Spiza americana BANGS, Proc. Biol. Soc. Washington, XII, 1898, 140 ("Santa Marta").—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 164 (Bonda).—ALLEN, Auk, XVII, 1900, 365 (Bonda and Santa Marta; winter range).

Additional records: Cincinnati (Carriker).

Nine specimens: Buritaca, Mamatoco, Rio Hacha, and Tucurín.

No. 38,796, Mamatoco, April 23, sexed as a female, and agreeing with other females in size, has a decided although rather small black throat-patch, while the wing-coverts are almost as "solid" cinnamonous as in the average male. This is undoubtedly a case of excessive development.

An abundant winter resident from sea-level up to 5,000 feet, wherever open country is found. It prefers the lowlands to the hills, however, and often occurs in flocks of a hundred or more individuals, sometimes associated with the Bobolink, but more often alone. Extreme migration dates recorded are September 17 and May 1.

512. *Astragalinus psaltria columbianus* (Lafresnaye).

Chrysomitris mexicana (not *Carduelis mexicana* Swainson) BANGS, Proc. Biol. Soc. Washington, XII, 1898, 139 ("Santa Marta").

Chrysomitris columbiana BANGS, Proc. Biol. Soc. Washington, XII, 1898, 139 ("Santa Marta").

Astragalinus psaltria columbianus ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 165 (Bonda, Onaca, and Minca).

Astragalinus psaltria croceus RIDGWAY, Bull. U. S. Nat. Mus., No. 50, I, 1901, 118 ("Santa Marta," in range).

Fourteen specimens: Cincinnati and Minca.

After an examination of this fine series (most of which are males)

the writer strongly inclines to the opinion that the great variation observable in regard to the amount of white on the tail is purely individual in character, contrary to his opinion previously expressed (ANNALS CARNEGIE MUSEUM, VI, 1910, 1913). No two birds in this series are exactly alike in the development of the white, although all are apparently fully adult. Some have very large white spots, reaching the base of the rectrices, almost as in *A. p. hesperophilus*; and from this condition there is every gradation down to no spots at all. In numerous cases it is asymmetrically developed. The white tips to the tertiaries also vary considerably in size, aside from the circumstance that they are so readily susceptible to wear, and the size of the white spot at the base of the primaries is another variable character. Under the circumstances it is exceedingly unlikely that *A. p. croceus* can be maintained as distinct.

The Colombian Goldfinch is a bird of the Upper Tropical Zone, ranging over the foothills and lower "cordillera" slopes, between 1,500 and 5,000 feet. It was reported from Bonda by both Mr. Smith and Mr. Brown, but the writer is inclined to believe that their specimens really came from the foothills above this point, along the road to the coffee-haciendas lying at a higher altitude. He has never seen this bird below 1,500 feet, and it is unusual to find it below 2,000 feet. It is not common at any altitude, however, nor at any locality visited. It is invariably seen in pairs, or (when not breeding) in small flocks, and is very restless and shy, taking fright at the slightest alarm and flying far away before alighting again. A nest was found at Cincinnati which was ready for eggs, but apparently abandoned. Like so many of the tropical birds, this species has learned to put a roof over its nest, building a neat, domed affair. This one was built in a coffee-tree, about eight feet above the ground, and near a laborer's hut.

513. *Spinus spinescens capitaneus* Bangs.

Chrysomitris spinescens (not of Bonaparte) SHARPE, Cat. Birds Brit. Mus., XII, 1888, 199 (San Sebastian and Sierra Nevada de Santa Marta).

Spinus spinescens capitaneus BANGS, Proc. Biol. Soc. Washington, XII, 1898, 178 (San Miguel; orig. descr.; type now in Mus. Comp. Zoöl.; meas.; crit.). BANGS, Proc. New England Zoöl. Club, I, 1899, 79 (San Sebastian).—ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 121, 165 (Sharpe's and Bangs' references).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 160, in text (San Miguel; crit.; meas.).



FIG. 1. Eastern Snow Peak of the Sierra Nevada de Santa Marta.



FIG. 2. Lake Macotama.

Chrysomitris spinescens var. *capitanea* DUBOIS, Syn. Avium, I, 1901, 591 ("Santa Marta," in range; ref. orig. descr.).

Spinus capitaneus SHARPE, Hand-List Birds, V, 1909, 229 (ref. orig. descr.; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 372 (ref. orig. descr.; range).

One specimen: Macotama.

The single female sent agrees well with others in Mr. Bangs' collection. Dr Chapman calls attention to the duller coloration of the males of this form as compared with those of true *spinescens*—a difference which, taken in connection with its slightly larger bill, may be considered as of subspecific value. There is no difference in general size, however, as claimed by Mr. Bangs.

Simons collected three specimens of this Siskin in August and September, 1879, at San Sebastian and some other point on the south slope of the Sierra Nevada. Mr. Brown got three adult males at San Miguel, on the north slope, and later on secured seven more specimens at San Sebastian. It appears to be a species of the Temperate Zone, but must be rare, or at least of erratic occurrence, on the north slope of the mountain, since it was not met with by the writer there until near the end of his collecting, when three were seen together on April 20 in the narrow, shrub-covered floor of the Macotama Valley, at 9,000 feet, one of which was fortunately secured. It was not encountered on the San Lorenzo, although a constant lookout was kept.

Family CATAMBLYRHYNCHIDÆ. PLUSH-CAPPED FINCHES.

514. *Catamblyrhynchus diadema diadema* Lafresnaye.

Catamblyrhynchus diadema SHARPE, Cat. Birds Brit. Mus., XII, 1888, 142 (San Sebastian).

Simons seems to be the only collector to have met with this species in the Santa Marta region, securing a single specimen at San Sebastian, on the south slope of the Sierra Nevada, at an altitude of 8,000 feet. Here, as elsewhere throughout its range in Colombia, as well as farther south, it appears to be a bird of the Subtropical Zone, and it is entirely likely that further research on this neglected south slope will show that the present outlying record is not a merely accidental occurrence, isolated though the locality is from the main Andean chain by the intervening low country.

BIBLIOGRAPHY.

The following list embraces all the titles discovered in a somewhat extensive search through the literature which contain any references whatever, either direct or indirect, important or otherwise, to the birds of the Santa Marta region. The list is arranged chronologically, and each title has been transcribed literally, and the place and date of publication given in full. Up to 1879 nearly all the references are merely incidental, and appear to have been based largely on the more or less doubtful material which passed through the hands of the brothers Verreaux, and even after this date (at which time the first formal paper on the birds of the region was brought out by Salvin and Godman), there are many such dubious references. In 1898 a series of papers from the pen of Mr. Bangs, based on Mr. Brown's collections, began to appear, and in 1900 Dr. Allen published the most complete account of the birds of the region which we have had up to date, with a supplement in 1905. In 1912 the first paper by the senior author, based on material received from Mr. Carriker, collected in part in the Santa Marta region, was published, while several subsequent preliminary descriptions of new forms from the same source have since appeared. Other students of the Neotropical fauna, Dr. Oberholser, Mr. Ridgway, Mr. Hellmayr, and particularly Dr. Chapman, have contributed to the literature on this subject in more recent years, mainly in connection with systematic investigations along other lines in which they have been engaged. The faunal lists for the region are thus relatively few in number.

1847. LAFRESNAYE, [FRÉDÉRIC] DE. Quelques oiseaux nouveaux ou rares rapportés par M. Delatre, de Bolivie, de la Nouvelle-Grenade, et de Panama.—*Revue Zoologique*, X, March, 1847, 67-79.

Includes descriptions of *Cardinalis granadensis* and *Dendroplex picirostris*, based on specimens purporting to have been collected by Delatre at Rio Hacha, on the coast northeast of Santa Marta. The types are now in the Academy of Natural Sciences of Philadelphia.

1853. GOULD, JOHN. [Descriptions of Five New Species of Humming Birds.]—*Athenæum* (London), No. 1329, April 16, 1853, 481.

This is an advance notice of the paper by the same author in the

Proceedings of the Zoological Society of London for 1853 (published 1854), appearing here merely in connection with the report of the meeting of the Society held April 12, 1853. *Trochilus floriceps* from the Santa Marta region is here first described.

1853. SCLATER, PHILIP LUTLEY. Note sur deux nouvelles espèces du genre Momot (*momotus*).—*Revue et Magasin de Zoologie*, (2), V, November, 1853, 489-490.

Momotus semirufus and *M. subrufescens* described from Santa Marta.

1853. BONAPARTE, CHARLES LUCIAN. Notes sur les collections rapportées en 1853, par M. A. Delattre, de son voyage en Californie et dans le Nicaragua. [Parts 1, 3.]—*Comptes Rendus de l'Académie des Sciences*, XXXVII, 1853, 806-810 (November), and 913-925 (December).

Contains original descriptions of *Psittacula pyralia* (page 807), from Rio Hacha, and *Saltator plumbeus* (page 923), from Santa Marta.

1854. BONAPARTE, CHARLES LUCIAN. Notes sur les collections rapportées en 1853, par M. A. Delattre, de son voyage en Californie et dans le Nicaragua. [Parts 4, 5, 6.]—*Comptes Rendus de l'Académie des Sciences*, XXXVIII, 1854, 1-11, 53-67 (January), and 258-266 (February).

In these several parts of this paper *Planesticus luridus* (page 4) and *Buglodytes albicilius* (page 57) are described for the first time, the former from "New Granada," but actually (as we learn later) from Santa Marta, as well as the latter. *Campylorhynchus pardus* (page 61), also from "New Granada," although given by Sclater from Santa Marta, is here a *nomen nudum*. *Careba gularis* (page 258) is specifically recorded from the same locality. (For a criticism of this paper by Bonaparte see Coues, *Birds of the Colorado Valley*, Bibliographical Appendix, 1878, 641. It was also published separately, with emendations.)

1854. REICHENBACH, LUDWIG. Aufzählung der Colibris oder Trochilideen in ihrer wahren natürlichen Verwandtschaft, nebst Schlüssel ihrer Synonymik.—*Journal für Ornithologie*, I, "1853," extraheft, March, 1854, 1-24.

Contains references to *Metallura floriceps* (page 8) and *Phaethornis anthophilus* (page 14), the latter being recorded from Santa Marta.

1854. BONAPARTE, CHARLES LUCIAN. Conspectus Generum Avium. Volume II. Leyden, "1857," pp. 232.

Zenaida pentheria is described from Santa Marta (page 84). The signature in which this description appears is dated December 10, 1854.

1855. BONAPARTE, CHARLES LUCIAN. Coup d'œil sur l'ordre des Pigeons.—*Comptes Rendus de l'Académie des Sciences*, XL, 1855, 96-102 (January), and 205-221 (February).
Zenaida pentheria, pages 98 and 220.
1854. BONAPARTE, CHARLES LUCIAN. Talleau [sic] des Oiseaux-Mouches.—*Revue et Magasin de Zoologie*, (2), VI, May, 1854, 248-257.
A nominal list of the genera and species of hummingbirds, among which *Adelomyia floriceps* appears (page 253).
1854. SCLATER, PHILIP LUTLEY. A Synopsis of the Fissirostral family Bucconidae.—*Annals and Magazine of Natural History*, (2), XIII, May, 1854, 353-365 (also 474-484).
Refers to Santa Marta specimens of *Bucco ruficollis* (page 361).
1854. GOULD, JOHN. Descriptions of Five New Species of Humming Birds.—*Proceedings Zoölogical Society of London*, "1853," July 25, 1854, 61-62.
Trochilus floriceps Gould is usually cited from this article; as a matter of fact, however, the name first appeared in the *London Athenæum* of a date more than a year earlier, whence it was evidently quoted by other authors.
1855. SCLATER, PHILIP LUTLEY. List of a Collection of Birds received by Mr. Gould, from the Province of Quijos in the Republic of Ecuador.—*Proceedings Zoölogical Society of London*, "1854," April 5, 1855, 109-115, pls. 66-67.
Reference is made (page 113) to a Santa Marta specimen of *Pyrgilena nudiceps*.
1855. SCLATER, PHILIP LUTLEY. Characters of six new species of the Genus *Thamnophilus*.—*Proceedings Zoölogical Society of London*, April 11, 1855, 18-19, pls. 79-82.
Thamnophilus melanonotus described and figured from a Santa Marta specimen.
1855. SCLATER, PHILIP LUTLEY. A Draft Arrangement of the Genus *Thamnophilus*.—*Edinburgh New Philosophical Journal*, n. s., I, April, 1855, 226-249.
Contains a brief description of and remarks upon the author's lately new species *Thamnophilus melanonotus*, from Santa Marta.
1855. GOULD, JOHN. A Monograph of The Trochilidae, or Family of Humming-Birds. Volume III. London, "1861," pls. 117-203 and text.
Adelomyia floriceps is figured on plate 202, which (with the accompanying text) appeared in Part 9, published May 1, 1855. The title here quoted is that of the completed volume.
1855. SCLATER, PHILIP LUTLEY. On a New Species of the Genus *Todirostrum* of Lesson.—*Proceedings Zoölogical Society of London*, May 16, 1855, 66-67, pl. 84.
Todirostrum nigriceps described and figured, from Santa Marta.

1855. REICHENBACH, LUDOVIC. *Trochilinarum Enumeratio ex Affinitate Naturali Reciproca Primum Ducta Provisoria*. Leipsic, July 18, 1855, pp. 1-12, pls. 679-865.

Metallura floriceps (page 5) and *Phaethornis anthophilus* are the only Santa Marta records included (the former by implication).

1855. SCLATER, PHILIP LUTLEY. On the Birds received in Collections from Santa Fé di Bogota.—*Proceedings Zoölogical Society of London*, December 18, 1855, 131-164, pls. 103-104.

Contains a number of incidental references to Santa Marta specimens of various species.

1856. BONAPARTE, CHARLES LUCIAN. *Tableaux paralléliques de l'ordre des Gallinacées*. Paris, 1856, pp. 20.

Attributes *Crypturus adspersus* to the Santa Marta region, doubtless in error.

1856. SCLATER, PHILIP LUTLEY. *Synopsis Avium Tanagrinarum*.—A descriptive Catalogue of the known Species of Tanagers. Part I.—*Proceedings Zoölogical Society of London*, July 30, 1856, 64-94.

Saltator plumbeus Bonaparte from Santa Marta is here considered a synonym of *Saltator olivascens* Cabanis (page 71). *Arremon schlegeli* attributed to Santa Marta (page 83).

1856. SCLATER, PHILIP LUTLEY. Note on *Buglodytes albicilius*, Bp.—*Proceedings Zoölogical Society of London*, July 30, 1856, 97.

States that Bonaparte's original specimens came from Santa Marta. The species is here identified with *Furnarius griseus* Swainson.

1856. SCLATER, PHILIP LUTLEY. *Synopsis Avium Tanagrinarum*.—A descriptive Catalogue of the known Species of Tanagers. Part II.—*Proceedings Zoölogical Society of London*, July 30 and August 13, 1856, 108-132.

Several Santa Marta records (at least one of which is doubtful) are included.

1856. BOURCIER, JULES. Description d'une espèce nouvellement connue d'Oiseau-mouche du genre *Pygmornis* (*Conspectus Trochilorum*, prince Ch. Bonaparte), famille des Trochilidés, sous-fam. 175 *Phætorinés*.—*Revue et Magasin de Zoölogie*, (2), VIII, December, 1856, 552-553.

Thalurania [sic] *calina* described from Santa Marta—almost certainly in error, as shown on page 260.

1857. SCLATER, PHILIP LUTLEY. *Synopsis Avium Tanagrinarum*.—A descriptive Catalogue of the known species of Tanagers. Part III.—*Proceedings Zoölogical Society of London*, "1856," January 26, 1857, 230-281.

Tanagra diaconus (page 233) and *Euphonia fulvicrissa* (page 276) recorded from Santa Marta, the latter being here described for the first time, the alleged locality, however, being erroneous.

1857. SCLATER, PHILIP LUTLEY. On the species of the American genus Parra.—*Proceedings Zoölogical Society of London*, "1856," January 26, 1857, 282-283.

Parra melanopygia, sp. nov., *Parra hypomelanä*, and *Parra gymnostoma* recorded from Santa Marta, on the strength of specimens received from Verreaux. The first two of these forms are now considered identical, while the locality ascribed to the last is doubtless a mistake.

1857. SCLATER, PHILIP LUTLEY. Review of the species of the South American Subfamily Tityrinæ.—*Proceedings Zoölogical Society of London*, July 14, 1857, 67-80.

Tityra personata (page 70) and *Pachyrhamphus cinereus* (page 75) recorded from Santa Marta.

1857. SCLATER, PHILIP LUTLEY. On Three New Species of the genus Todi-rostrum.—*Proceedings Zoölogical Society of London*, July 14, 1857, 82-84, pl. 125.

With a list of the described species of the genus, two of which are recorded from Santa Marta.

1858. SCLATER, PHILIP LUTLEY. Review of the species of the Fissirostral Family Momotidæ.—*Proceedings Zoölogical Society of London*, "1857," January 12 and 28, 1858, 248-260, pl. 128.

Momotus subrufescens and *Momotus semirufus* from Santa Marta—a repetition of the original records.

1858. SCLATER, PHILIP LUTLEY. Description of Eleven New Species of Birds from Tropical America.—*Proceedings Zoölogical Society of London*, "1857," January 28, 1858, 271-277, pl. 130.

Campylorhynchus pardus (ex Bonaparte) described from a Santa Marta specimen in the collection of George N. Lawrence.

1858. SCLATER, PHILIP LUTLEY. Notes on a Collection of Birds received by M. Verreaux of Paris from the Rio Napo in the Republic of Ecuador.—*Proceedings Zoölogical Society of London*, April 13 and 26, 1858, 59-77, pl. 132.

Dolichonyx oryzivorus from Santa Marta (page 72).

1858. SCLATER, PHILIP LUTLEY. Synopsis of the American Ant-birds (Formicariidæ). (Part I., containing the Thamnophilinæ.)—*Proceedings Zoölogical Society of London*, November 9, 1858, 202-224, pls. 139-140.—Part II, containing the Formicivorinæ or Ant-Wrens.—*Idem*. November 9, 1858, 232-254, pls. 141-142.—Part III, containing the Third Subfamily Formicariinæ, or Ant-Thrushes.—*Idem*, November 9, 1858, 272-289, pl. 143.

Four species of this family are here recorded from Santa Marta, one of which, *Cercomacra nigricans*, is described as new (page 245).

1859. SCLATER, PHILIP LUTLEY. Characters of Five New Species of American Birds.—*Proceedings Zoölogical Society of London*, "1858," January, 1859, 446-449.

Cyclorhis flavipectus described, and recorded from Santa Marta (page 448).

1859. SCLATER, PHILIP LUTLEY. Descriptions of New Species of the American family Tyrannidæ.—*Proceedings Zoölogical Society of London*, May, 1859, 40-46.

Myiodynastes nobilis described from Santa Marta (page 42).

1859. SCLATER, PHILIP LUTLEY. List of the First Collection of Birds made by M. Louis Fraser at Pallatanga, Ecuador, with Notes and Descriptions of New Species.—*Proceedings Zoölogical Society of London*, August, 1859, 135-147, pl. 154.

Incidentally refers to a Santa Marta specimen of *Troglodytes furvus* (page 137).

1860. SCLATER, PHILIP LUTLEY. List of Birds collected by M. A. Boucard in the State of Oaxaca in South-western Mexico, with Descriptions of New Species.—*Proceedings Zoölogical Society of London*, "1859," February, 1860, 369-393.

On page 383 there is an incidental reference to Santa Marta specimens of *Ramphocenus rufiventris*.

1860. GOULD, JOHN. A Monograph of The Trochilidæ, or Family of Humming-Birds. Volume V. London, "1861," pls. 284-360 and text.

Sapphironia caruleogularis recorded (probably in error) from Santa Marta. The plate and text for this species appeared in Part 19, issued May 1, 1860.

1860. HEINE, FERDINAND. Beschreibung eines neuen Riesen-Baumhackers. (*Xiphocolaptes* Less.).—*Journal für Ornithologie*, VIII, May, 1860, 185-186.

Xiphocolaptes fortis described—supposed to come from Cartagena or Santa Marta—a correct guess.

1860. SCLATER, PHILIP LUTLEY. List of Birds collected by Mr. Fraser in Ecuador, at Nanegal, Calacali, Perucho, and Puellaro; with Notes and Descriptions of New Species.—*Proceedings Zoölogical Society of London*, May, 1860, 83-97, pl. 160.

Records a specimen of *Oryzoborus athiops*, sp. nov., taken at Minca, near Santa Marta.

1860. SCLATER, PHILIP LUTLEY. List of Birds collected by Mr. Fraser at Esmeraldas, Ecuador, with Descriptions of New Species.—*Proceedings Zoölogical Society of London*, August, 1860, 291-298.

Refers in passing to a Santa Marta specimen of *Tityra personata* (page 295).

1860. CABANIS, JEAN, and HEINE, FERDINAND. Museum Heineanum. Verzeichniss der ornithologischen Sammlung des Oberamtmann Ferdinand Heine auf Gut St. Burchard vor Halberstadt. . . . III. Theil, die Schrillvögel. . . . Halberstadt, 1860, pp. 221.

The genus *Anthocephala* is instituted (page 72) for *Trochilus floriceps* Gould, a Santa Marta species.

1861. GOULD, JOHN. An Introduction to the Trochilidæ, or Family of Humming-Birds. [Octavo edition.] London, 1861, pp. iv + 212.
 Synonymy for *Anthocephala floriceps*, a Santa Marta species, occurs on page 115.
1862. SCLATER, PHILIP LUTLEY. Descriptions of Twelve New Species of American Birds, of the Families Dendrocolaptidæ, Formicariidæ, and Tyrannidæ.—*Proceedings Zoölogical Society of London*, "1861," February, 1862, 377-383, pl. 36.
Ramphocanus sanctamarthæ (page 380) and *Phyllomyias semifusca* described from Santa Marta, the latter being figured also.
1862. SCLATER, PHILIP LUTLEY. Catalogue of a Collection of American Birds. London, (1861-)1862, pp. xvi + 338, 20 pls.
 The first signature is dated May 1, 1861, the last May 16, 1862. Numerous Santa Marta records, based on specimens received by the author through Verreaux, are incorporated, some of which are here published for the first time. *Phanicothraupis erythrolæma* (page 83) and *Pachyrhamphus cinereiventris* (page 242) are here described as new species from the locality in question.
1862. MALHERBE, ALFRED. Monographie des Piciidées ou Histoire Naturelle des Piciidés, Picumninés, Yunginés ou Torcols. . . . Volume II. Metz, 1862, pp. 1-325.
 Contains a reference on page 228 to *Zebrapicus pucherani* as a bird of Santa Marta.
1863. SCHLEGEL, HERMAN. Museum d'Histoire Naturelle des Pays-Bas, III, Livr. 4, Monographie 19: Momotus, 1863, pp. 8.
Momotus subrufescens from Santa Marta (page 5).
1864. SCLATER, PHILIP LUTLEY. On the Species of the American Genus Coccyzus.—*Proceedings Zoölogical Society of London*, (May ?), 1864, 119-122.
 Records a Santa Marta specimen of *Coccyzus landsbergi*.
1865. SCLATER, PHILIP LUTLEY, and SALVIN, OSBERT. Notes on a Collection of Birds from the Isthmus of Panama.—*Proceedings Zoölogical Society of London*, "1864" (February, 1865?), 342-373, pl. 30.
 Refers incidentally to Santa Marta records of several species.
1866. CASSIN, JOHN. A Study of the Icteridae.—*Proceedings Academy of Natural Sciences of Philadelphia*, March, 1866, 10-25.
Molothrus cabanisi, sp. nov., is described, and reference made to a Santa Marta specimen in the collection of George N. Lawrence.
1866. BAIRD, SPENCER F. Review of American Birds in the Museum of the Smithsonian Institution.—*Smithsonian Miscellaneous Collections*, No. 181, June, 1864-June, 1866, pp. iv + 478.
 Santa Marta specimens of *Pheugopedius fasciatoventris* (page 135) and *Cyclorhis flavipectus* (page 389) are listed.
1866. MULSANT, ETIENNE, VERREAUX, JULES, and VERREAUX, EDOUARD. Essai d'une Classification Méthodique des Trochilidéés ou Oiseau-

Mouches.—*Mémoires Société Impériale Académique des Sciences Naturelles de Cherbourg*, XII, 1866, 152-240.

Adelomyia floriceps, page 215.

1866. GRAY, GEORGE ROBERT. On a New Species of Penelope, lately living in the Society's Gardens.—*Proceedings Zoölogical Society of London*, October, 1866, 206, pl. 22.

Penelope greeryi, sp. nov., figured and described from Santa Marta. The name proves to be a synonym of *Penelope marail* Müller, and the alleged locality erroneous.

1866. SCLATER, PHILIP LUTLEY. On a New Species of the Genus *Accipiter* from New Granada.—*Proceedings Zoölogical Society of London*, October, 1866, 302-304.

Accipiter castanilius Bonaparte, recorded in error from Santa Marta, the species being a native of Africa instead.

1867. SCHLEGEL, HERMAN. *Museum d'Histoire Naturelle des Pays-Bas*, VI, Livrs. 8 and 9, Monographie 31: Anseres, 1866 and 1867, pp. 122.

Dendrocygna autumnalis from Santa Marta (page 92).

1867. SALVIN, OSBERT. On some Collections of Birds from Veragua.—*Proceedings Zoölogical Society of London*, May, 1867, 129-161, pl. 14.

Records a Santa Marta specimen of *Turdus luridus* Bonaparte (page 132), "collected by the late Mr. Bouchard."

1867. GRAY, GEORGE ROBERT. List of the Specimens of Birds in the Collection of the British Museum. Part V. Gallinæ. London, 1867, pp. 120.

Lists (page 7) the supposed Santa Marta specimen of *Penelope greeryi*, also (page 12) two specimens of *Ortalia garrula* from "New Granada" (probably Santa Marta).

1868. GRAY, GEORGE ROBERT. List of the Specimens of Birds in the Collection of the British Museum. Part III, Sections 3 and 4. Capitonidæ and Picidæ. London, 1868, pp. 137.

Picumnus cinnamomeus from Santa Marta (page 27).

1869. GRAY, GEORGE ROBERT. Hand-List of Genera and Species of Birds. Part I. Accipitres, Fissirostres, Tenuirostres, and Dentiostres. London, (May?), 1869, pp. xx + 404.

Contains about a dozen references (all second-hand, of course) to Santa Marta species and specimens.

1870. SCLATER, PHILIP LUTLEY. Further Notes on the Cuckoos of the Genus *Coccyzus*.—*Proceedings Zoölogical Society of London*, May, 1870, 165-169.

Coccyzus landsbergi from Santa Marta (page 169).

1869. LAWRENCE, GEORGE N. Characters of some New South American Birds, with Notes on other rare or little known Species.—*Annals Lyceum Natural History of New York*, IX, December, 1869, 265-275.

Refers (page 272) to a Santa Marta specimen of *Icterus xanthornus*.

1870. SCLATER, PHILIP LUTLEY. Notices of some new or little-known Species of South-American Birds.—*Proceedings Zoölogical Society of London*, August, 1870, 328-330.
Contains an incidental reference (page 328) to a Santa Marta specimen of *Thryothorus leucotis*.
1870. GRAY, GEORGE ROBERT. Hand-List of Genera and Species of Birds. . . . Part II. Conirostres, Scansores, Columbæ, and Gallinæ. London, (November?), 1870, pp. xv + 278.
Euphonia fulvicrissa (page 78) and *Penelope græyi* appear to be the only Santa Marta records in this volume.
1871. SCLATER, PHILIP LUTLEY, and SALVIN, OSBERT. Synopsis of the *Cra-cida*.—*Proceedings Zoölogical Society of London*, "1870," February, 1871, 504-544.
Five species are here recorded from Santa Marta, one of which, *Ortalia ruficrissa*, is described as new.
1871. WYATT, CLAUDE W. Notes on some of the Birds of the United States of Columbia.—*Ibis*, April, 1871, 113-131; July, 1871, 319-335; October, 1871, 373-384; pl. 5 (map).
In this paper, primarily devoted to the birds of the Eastern Andes of Colombia, fifteen species are recorded as having been observed at Santa Marta and Cienaga, where the author had occasion to stop over for a few hours in December, 1869.
1871. SCLATER, PHILIP LUTLEY. Remarks on some Species of *Dendrocolap-tida* in the Collection of the Smithsonian Institution.—*Proceedings Zoölogical Society of London*, May, 1871, 85-86.
Records *Synallaxis candæi* from Rio Hacha, on the strength of a specimen in the Derby Museum collected by Delattre.
1871. GRAY, GEORGE ROBERT. Hand-List of Genera and Species of Birds. . . . Part III. Struthionæ, Grallæ, and Anseres. . . . London, (July?), 1871, pp. xi + 350.
Parra hypomelana and *P. melanopygia* given as coming from Santa Marta (page 70).
1871. SCLATER, PHILIP LUTLEY. Notes on rare or little-known Animals now or lately living in the Society's Gardens. Part II. Birds.—*Proceedings Zoölogical Society of London*, October, 1871, 489-496.
Refers incidentally to a specimen of *Conurus aruginosus* secured by Claude W. Wyatt at Cienaga.
1872. SCLATER, PHILIP LUTLEY. A Revision of the Species of the Fringilline Genus *Sycalis*.—*Ibis*, January, 1872, 39-48, pls. 2-3.
Refers to Wyatt's Santa Marta record for *Sycalis flaveola* (page 41).
1872. GIEBEL, CHRISTOPH GOTTFRIED. Thesaurus Ornithologiæ. . . . Erster Band. Leipzig, (June?), 1872, pp. ix + 868.
Buglodytes albicilius Bonaparte (page 504), *Cardinalis granaden-*

- sis (page 578), and *Cercomacra nigricans* (page 612) are three Santa Marta species duly recorded in this volume.
1873. SALVIN, OSBERT, and ELLIOT, DANIEL G. Notes on the *Trochilidæ*. The Genus *Phaethornis*.—*Ibis*, January, 1873, 1-14.
Records a Santa Marta specimen of *Phaethornis longirostris* (page 7).
1873. SCLATER, PHILIP LUTLEY, and SALVIN, OSBERT. Nomenclator Avium Neotropicalium. . . . London, 1873, pp. viii + 163.
In this work all of the various species originally described from Santa Marta up to the year of publication are duly listed, with an indication (very general as a rule) of the range of each. One new form, *Furnarius agnatus*, is described from the region in question.
1874. SCLATER, PHILIP LUTLEY. On the Species of the Genus *Synallaxis* of the Family *Dendrocolaptidæ*.—*Proceedings Zoölogical Society of London*, June 1, 1874, 2-28, pls. 2-4.
Again records the Rio Hacha specimen of *Synallaxis candæi* collected by Delattre.
1874. SHARPE, R. BOWDLER. Catalogue of the Birds in the British Museum. Volume I. London, (June?), 1874, pp. xiii + 480, pls. 14.
Records a specimen of *Asturina magnirostris* from Santa Marta (page 207).
1874. SCHLEGEL, HERMAN. Museum d'Histoire Naturelle des Pays-Bas, III, Livr. 11, Monographie 39: Alcedines (Revue), 1874, pp. 47.
Alcedo amazona from Santa Marta (page 2).
1875. SHARPE, R. BOWDLER. Contributions to a History of the *Accipitres*. The Genus *Glaucidium*.—*Ibis*, January, 1875, 35-59, pls. 1-2.
Lists Santa Marta specimens of *Glaucidium ferox*, with a few critical remarks on the same.
1875. GIEBEL, CHRISTOPH GOTTFRIED. Thesaurus Ornithologiæ. . . . Zweiter Band. Leipzig, (March?), 1875, pp. vi + 787.
About nine species of the Santa Marta region are included in this volume.
1875. ELLIOT, DANIEL G. Notes on the *Trochilidæ*. The Genera *Chlorostilbon* and *Panychlora*.—*Ibis*, April, 1875, 149-172.
Lists a specimen of *Chlorostilbon hæberlini* from Santa Marta (page 161).
1875. SCLATER, PHILIP LUTLEY. On the Curassows now or lately living in the Society's Gardens.—*Transactions Zoölogical Society of London*, IX, iv, July, 1875, 273-288, pls. 40-53.
Crax alberti recorded from Santa Marta (page 280), from a specimen in the Paris Museum collected by Bonnacourt.
1875. SHARPE, R. BOWDLER. Catalogue of the Birds in the British Museum. Volume II. London, December, 1875, pp. xi + 326, pls. 14.
Records three Santa Marta specimens of *Glaucidium ferox* (page 202).

1875. Mulsant, Etienne. Catalogue des Oiseaux-Mouches ou Colibris.—*Annales Société Linnéenne de Lyon*, n. s., XXII, "1876," 1875, 199-228.
Anthocephala floriceps, page 220.
1876. Sclater, Philip Lutley, and Salvin, Osbert. A Revision of the Neotropical Anatidæ.—*Proceedings Zoölogical Society of London*, August 1, 1876, 358-412, pl. 34.
 Records Santa Marta specimens of *Dendrocygna discolor* (page 375) and *Querquedula cyanoptera* (page 385).
1876. Mulsant, Etienne, and Verreaux, Edouard. Histoire Naturelle des Oiseaux-Mouches ou Colibris constituant des Trochilidés. Volume III. Lyons, "1877," pp. 303.
 Livraison 2, which appeared in 1876, contains an account of *Anthocephala floriceps*.
1877. Giebel, Christoph Gottfried. Thesaurus Ornithologiæ. . . . Dritter Band. Leipzig, (May?), 1877, pp. vi + 861.
 Contains references to several Santa Marta species.
1879. Elliot, Daniel G. A Classification and Synopsis of the Trochilidæ.—*Smithsonian Contributions to Knowledge*, XXIII, Article V, March, 1879, pp. xii + 277.
Anthocephala floriceps, page 183.
1879. Salvin, Osbert, and Godman, F. DuCane. On a Collection of Birds from the Sierra Nevada of Santa Marta, Colombia.—*Ibis*, April, 1879, 196-206.
 The first formal paper on the birds of the Santa Marta region, based on a collection of forty-nine species made by Frederic A. A. Simons in the year 1878 (January to June), mainly in the southeastern part of the region, around Valle de Upar and Mánaure, and up to about seven thousand feet on the southern slopes of the Sierra Nevada. The majority of the species secured are wide-ranging, well-known forms, but one, *Campylopterus phainopeplus*, is described as new, and an extended account of its habits is presented.
1879. Gurney, John Henry. Notes on a 'Catalogue of the Accipitres in the British Museum' by R. Bowdler Sharpe (1874). [Part 17.]—*Ibis*, July, 1879, 330-341.
 Records a specimen of *Gampsonyx swainsoni* from Santa Marta (page 331).
1879. Sclater, Philip Lutley. Supplementary Notes on the Curassows now or lately living in the Society's Gardens.—*Transactions Zoölogical Society of London*, X, October 1, 1879, 543-546, pls. 89-95.
 Contains a description and figure of a curassow referred by the author to his *C. incommoda*, but really belonging to a Santa Marta species, *C. annulata*, as shown in the present paper (page 176).
1879. Reichenow, Anton, and Schalow, Herman. Compendium der neu

beschriebenen Gattungen und Arten. [Part] II.—*Journal für Ornithologie*, XXVII, October, 1879, 420-437.

Includes a reprint of the original description of *Campylopterus phainopeplus* Salvin and Godman (page 429).

1880. SALVIN, OSBERT, and GODMAN, F. DUCANE. On the Birds of the Sierra Nevada of Santa Marta, Colombia.—*Ibis*, January, 1880, 114-125, pl. 3; April, 1880, 169-178, pls. 4-5.

A continuation of the authors' first paper on the subject. The results of Simons' work from June, 1878, through July, 1879, are here summarized. One hundred and thirty-three species are listed, with exact localities and dates indicated for each, and critical comment in some cases. The new species here described are *Basil-euterus conspicillatus*, *Pacilothraupis melanogenys* (figured), *Buar-remon melanocephalus*, *Oethæca poliogastra*, *Rhamphomicron dor-sale* (figured), and *Oxygogon cyanolæmus* (figured). A figure is also given of *Campylopterus phainopeplus*, a species described in the authors' first paper. The bulk of the collection here listed came from Minca (misspelled "Mineca" in the paper), a coffee-plantation near Santa Marta, and from the higher parts of the Sierra Nevada itself, so that the species are nearly all additional to those of the first list. A few are incompletely identified.

1880. REICHENOW, ANTON, and SCHALOW, HERMAN. Compendium der neu beschriebenen Gattungen und Arten. [Part 5.]—*Journal für Ornithologie*, XXVIII, July, 1880, 314-324.

A reprint of the original descriptions of certain newly described species of birds, including among others those given in Salvin and Godman's paper just cited.

1881. VON PELZELN, AUGUST. On the Genus *Furnarius*.—*Ibis*, July, 1881, 402-411.

Description, references, etc., for *Furnarius agnatus* of the Santa Marta region, page 408.

1881. GURNEY, JOHN HENRY. Notes on a 'Catalogue of the Accipitres in the British Museum' by R. Bowdler Sharpe (1874). [Part 25.]—*Ibis*, October, 1881, 547-567.

Critical remarks on certain Santa Marta specimens (erroneously) referred to *Tinnunculus sparverius* (page 548 *et seq.*).

1881. SALVIN, OSBERT, and GODMAN, F. DUCANE. On some new and little-known species of *Trochilida*.—*Ibis*, October, 1881, 595-597, pl. 16.

Records a second specimen of *Anthocephala floriceps*, and describes a new species of *Panychlora* (*P. russata*) from the Santa Marta region.

1881. VON BERLEPSCH, HANS. On some necessary Changes in the Nomenclature of South-American Birds.—*Ibis*, April, 1881, 239-245.

Remarks on *Thamnophilus pulchellus* from Santa Marta, page 245.

1881. SHARPE, R. BOWDLER. Catalogue of the Birds in the British Museum.

Volume VI. London, (December), 1881, pp. xiii + 421, pls. 18.

Mentions Santa Marta specimens of *Troglodytes rufulus* (page 259) and *Mimus gilvus* (page 351) in the collection of Messrs. Salvin and Godman.

1882. REICHENOW, ANTON, and SCHALOW, HERMAN. Compendium der neu beschriebenen Gattungen und Arten. [Part 9.]-*Journal für Ornithologie*, April, 1882, 213-228.

Contains a reprint of the original description of *Panychlora russata* Salvin and Godman (page 216).

1882. SCLATER, PHILIP LUTLEY. A Monograph of the Jacamars and Puff-birds, or Families Galbulidæ and Bucconidæ. London, 1879-1882, pp. liii + 171, pls. 55.

Santa Marta records for *Galbula ruficauda* and *Bucco ruficollis* are given (pages 15 and 89).

1882. SCLATER, PHILIP LUTLEY. On two apparently new Species of the Genus *Synallaxis*.—*Proceedings Zoölogical Society of London*, October 1, 1882, 578-579, pl. 43.

Synallaxis fusco-rufa, sp. nov., from San Sebastian, Sierra Nevada de Santa Marta, described and figured.

1883. SCLATER, PHILIP LUTLEY. On the Genera *Microbates* and *Rhamphocænus* of the Family *Formicariidæ*.—*Ibis*, January, 1883, 92-96.

Lists Santa Marta specimens of *Rhamphocænus rufiventris*, under which he places his *R. sanctæ-marthæ* (1861) as a synonym.

1883. D'HAMONVILLE, LOUIS TARDIF. Nouveautés Ornithologiques.—*Bulletin Société Zoölogique de France*, VIII, 1883, 76-80.

Contains a French translation of the original account of *Campylopterus phainopeplus* and *Oxygogon cyanolæmus*, both of which are erroneously attributed to Sclater.

1883. SCLATER, PHILIP LUTLEY. Review of the Species of the Family *Icteridæ*.—Part I, *Cassicinæ*.—*Ibis*, April, 1883, 145-163, pls. 6-7. Part II, *Icterinæ*.—*Idem*, July, 1883, 352-374, pl. 11.

Quotes Santa Marta records for five species of this family.

1883. GADOW, HANS. Catalogue of the Birds in the British Museum. Volume VIII. London, (July?), 1883, pp. 13 + 386, pls. 9.

Measurements of a Santa Marta specimen of *Cyclorhis flaviventris*, page 320.

1883. SHARPE, R. BOWDLER. A Monograph of the Trochilidæ, or Family of Humming-Birds. By John Gould, F.R.S. Supplement. Part 3. London, 1883.

In this part there are included colored figures and descriptions of the following species peculiar to the Santa Marta region: *Panychlora russata*, *Rhamphomicron dorsale*, and *Oxygogon cyanolæmus*.

1884. SCLATER, PHILIP LUTLEY. A Review of the Species of the Family *Icteridæ*. Part III. *Agelainæ*.—*Ibis*, January, 1884, 1-27, pl. 1. Part IV. *Quiscalinæ*.—*Idem*, April, 1884, 149-167, pl. 5.

Quotes Santa Marta records for four additional species of this family.

1884. VON BERLEPSCH, HANS, and TACZANOWSKI, LADISLAS. Liste des Oiseaux recueillis par MM. Stolzmann et Siemiradzki dans l'Ecuadeur occidentale.—*Proceedings Zoölogical Society of London*, "1883," April 1, 1884, 536-577, pl. 50.

Refers incidentally to Santa Marta specimens of *Pachyrhamphus albogriseus* (page 559) and *Rhamphocanus rufiventris* (page 565).

1884. RIDGWAY, ROBERT. On a collection of birds made by Messrs. J. E. Benedict and W. Nye, of the United States Fish Commission steamer "Albatross."—*Proceedings United States National Museum*, VII, July 29, 1884, 172-180.

Lists a Santa Marta specimen of *Icterus xanthornus* from the Lawrence Collection (page 175, note).

1884. VON BERLEPSCH, HANS. Untersuchungen über die Vögel der Umgegend von Bucaramanga in Neu-Granada.—*Journal für Ornithologie*, XXXII, July and October, 1884, 273-320.

Contains a few incidental references to Santa Marta birds.

1884. REICHENOW, ANTON, and SCHALOW, HERMAN. Compendium der neu beschriebenen Gattungen und Arten. [Part 12.]—*Journal für Ornithologie*, XXXII, July and October, 1884, 381-436.

Contains a reprint of the original description of *Synallaxis fuscorufa* Sclater.

1884. VON BERLEPSCH, HANS, and TACZANOWSKI, LADISLAS. Deuxième liste des Oiseaux recueillis dans l'Ecuadeur occidentale par MM. Stolzmann et Siemiradzki.—*Proceedings Zoölogical Society of London*, October 1, 1884, 281-313, pl. 24.

Critical remarks on a Santa Marta specimen of *Synallaxis wyatti* on page 299.

1885. SHARPE, R. BOWDLER. Catalogue of the Birds in the British Museum. Volume X. London, (March?), 1885, pp. xiii + 682, pls. 12.

Lists Santa Marta specimens of twelve species of Mniotiltidæ, also one of *Poliophtila*, mainly from the Salvin and Godman Collection.

1885. SHARPE, R. BOWDLER. A Monograph of the Trochilidæ, or Family of Humming-Birds. By John Gould, F.R.S. Supplement, Part 4, London, 1885.

In this part *Campylopterus phainopeplus* is figured and described, with biographical matter quoted from Salvin and Godman's original account.

1886. SCLATER, PHILIP LUTLEY. Catalogue of the Birds in the British Museum. Volume XI. London, (May?), 1886, pp. xvii + 431, pls. 18.

Lists Santa Marta specimens of thirty-six species of Cerebidæ, Tanagridæ, and Ictéridæ.

1887. SALVIN, OSBERT, and GODMAN, F. DUCANE. Biologia Centrali-Ameri-

cana. Aves. Vol. I. (London?), September, 1879–April, 1887, pp. 512, pls. 1–35.

This great work was issued in parts, dated independently. It contains numerous incidental references to Santa Marta records and specimens, mainly from the Salvin and Godman Collection.

1887. SALVIN, OSBERT. Description of a new Species of the Genus *Setophaga*.—*Ibis*, April, 1887, 129–130, pl. 4.

Setophaga flavivertex, sp. nov., from the Sierra Nevada de Santa Marta.

1887. VON BERLEPSCH, HANS. Kritische Uebersicht der in den sogenannten Bogota-Collectionen (S. O. Colombia) vorkommenden Colibri-Arten und Beschreibung eines neuen Colibri (*Cyanolesbia nehrkorni*).—*Journal für Ornithologie*, XXXV, July, 1887, 313–336.

Several Santa Marta hummingbird references are quoted.

1888. SHARPE, R. BOWDLER. Catalogue of the Birds in the British Museum. Volume XII. London, (January?), 1888, pp. xv + 872, pls. 16.

Santa Marta records for twelve species of Fringillidæ are here given.

1888. RIDGWAY, ROBERT. Notes on some Type-specimens of American Trog-lodytidæ in the Lafresnaye Collection.—*Proceedings Boston Society of Natural History*, XXIII, March, 1888, 383–388.

Contains critical remarks on a Santa Marta specimen of *Thryothorus fasciato-ventris* (page 387).

1888. SCLATER, PHILIP LUTLEY. Catalogue of the Birds in the British Museum. Volume XIV. London, (May?), 1888, pp. xix + 495, pls. 26.

Thirty-six species, of which Santa Marta specimens are listed, are included in this volume, belonging to the families Tyrannidæ, Pipridæ, and Cotingidæ.

1888. ELLIOT, DANIEL G. The Jacanidæ.—*Auk*, July, 1888, 288–305.

Records a Santa Martan specimen of *Jacana nigra*, and identifies *Jacana melanopygia* Sclater, described from that locality, as the same species.

1888. RIDGWAY, ROBERT. A review of the genus *Psittacula* of Brisson.—*Proceedings United States National Museum*, X, August 6, 1888, 529–548.

Records a Santa Marta specimen of *Psittacula guianensis* (page 544).

1889. ALLEN, JOEL A. On *Cyclorhis viridis* (Vieill.) and its near Allies, with Remarks on other Species of the Genus *Cyclorhis*.—*Bulletin American Museum of Natural History*, II, June, 1889, 123–135.

Critical remarks on a Santa Marta specimen of *Cyclorhis flavipectus*, page 131.

1889. VON BERLEPSCH, HANS. Systematisches Verzeichniss der von Herrn Gustav Garlepp in Brasilien und Nord-Peru im Gebiete des oberen

Amazonas gesammelten Vogelbälge. [Part 2.]—*Journal für Ornithologie*, XXXVII, July, 1889, 289-321, pl. 3.

Remarks on Sclater's type of *Parra melanopygia* from Santa Marta, page 320.

1889. SCLATER, PHILIP LUTLEY. Notes on some recently described Species of *Dendrocolaptidæ*.—*Ibis*, July, 1889, 350-354, pl. 11.

Refers to a Santa Marta specimen of *Dendroornis* identified as *D. susurrans*, page 353.

1890. CHAPMAN, FRANK M. On the Winter Distribution of the Bobolink (*Dolichonyx oryzivorus*), with Remarks on its Routes of Migration. —*Auk*, January, 1890, 39-45.

Quotes Sclater's Santa Marta record for this species, page 42.

1890. RIDGWAY, ROBERT. A review of the genus *Xiphocolaptes* of Lesson.—*Proceedings United States National Museum*, XII, February 5, 1890, 1-20.

Gives a translation of Heine's description of *Xiphocolaptes fortis*, supposed to have come from Cartagena or Santa Marta (page 19).

1890. SCLATER, PHILIP LUTLEY. Catalogue of the Birds in the British Museum. Volume XV. London, (March?), 1890, pp. xvii + 372, pls. 20.

Records Santa Marta specimens of twenty-one species of *Dendrocolaptidæ* and *Formicariidæ*.

1890. HARGITT, EDWARD. Catalogue of the Birds in the British Museum. Volume XVIII. London, (June?), 1890, pp. xv + 598, pls. 15.

Five species of *Picidæ* are recorded from Santa Marta in this volume.

1891. SCLATER, PHILIP LUTLEY. Catalogue of the Birds in the British Museum. Volume XIX. (Families *Rhamphastidæ*, *Galbulidæ*, and *Bucconidæ*.) London, (April?), 1891, pp. xii + 122-208, pls. 6-10.

Contains Santa Marta records for seven species of these three families.

1891. SHELLEY, GEORGE E. Catalogue of the Birds in the British Museum. Volume XIX. (Families *Indicatoridæ*, *Capitonidæ*, *Cuculidæ*, and *Musophagidæ*.) London, (April?), 1891, pp. xii + 1-121, 209-456, pls. 1-5, 11-13.

Three species of *Cuculidæ* have Santa Marta records in this volume.

1891. CHERRIE, GEORGE K. Notes on Costa Rican Birds.—*Proceedings United States National Museum*, XIV, November 17, 1891, 517-537.

Critical remarks on a Santa Marta specimen of *Thryothorus fasciiventris*, pages 522-3.

1891. SALVADORI, TOMASSO. Catalogue of the Birds in the British Museum. Volume XX. London, (December?), 1891, pp. xvii + 659, pls. 18.

Six species of *Psittacidæ* are attributed to Santa Marta in this volume.

1892. SALVIN, OSBERT. Catalogue of the Birds in the British Museum. Volume XVI. (Upupæ and Trochili). London, (June?), 1892, pp. xvi + 1-433, 655-668, pls. 1-9.
 Santa Marta records for twenty species of Trochilidæ are given.
1892. HARTERT, ERNST J. O. Catalogue of the Birds in the British Museum. Volume XVI. (Cypselidæ, Caprimulgidæ, Podargidæ, and Steatornithidæ). London, (June?), 1892, pp. 434-654, pls. 10-14.
 Santa Marta records for two species of Caprimulgidæ are cited.
1892. SHARPE, R. BOWDLER. Catalogue of the Birds in the British Museum. Volume XVII. (Leptosomatidæ, Coraciidæ, Meropidæ, Alcedinidæ, Momotidæ, Todidæ, and Coliidæ). London, (June?), 1892, pp. xi + 1-347, 498-500, pls. 1-12.
 Four species of Alcedinidæ and Momotidæ are represented by Santa Marta specimens, duly listed here.
1892. OGILVIE-GRANT, W. R. Catalogue of the Birds in the British Museum. Volume XVII. (Bucerotidæ and Trogonidæ). London, (June?), 1892, pp. 347-497, 500-502, pls. 13-17.
 Santa Marta records are here given for two species of Trogonidæ.
1892. BOUCARD, ADOLPHE. A complete list up to date of the Humming-Birds found in Columbia, with descriptions of several supposed new species.—*Humming Bird*, II, August, 1892, 73-87.
 A list of 185 species, giving for each the place of original publication and the range. In addition to listing all the species peculiar to the Santa Marta region, others are also attributed to it, possibly on the basis of specimens in the author's collection.
1893. ALLEN, JOEL A. On a Collection of Birds from Chapada, Matto Grosso, Brazil, made by Mr. H. H. Smith. Part III.—Pipridæ to Rheidæ.—*Bulletin American Museum of Natural History*, V, June, 1893, 107-158.
 Refers incidentally to Santa Marta records of *Thamnophilus nigricristatus* (page 117) and *Momotus subrufescens* (page 128).
1893. HARTERT, ERNST J. O. On the Birds of the Islands of Aruba, Curaçao, and Bonaire.—*Ibis*, July, 1893, 289-338, pls. 8-9.
 Remarks on Santa Marta specimens of *Icterus icterus* in the British Museum, page 297.
1893. SALVADORI, TOMMASO. Catalogue of the Birds in the British Museum. Volume XXI. London, (July?), 1893, pp. xix + 676, pls. 15.
 Four species of Columbidae are given as being represented by Santa Marta specimens in the collection.
1893. OGILVIE-GRANT, W. R. Catalogue of the Birds in the British Museum. Volume XXII. London, (November?), 1893, pp. xvi + 585, pls. 8.
 Santa Marta records for three species of Cracidæ are here included.
1893. SALVIN, OSBERT. *Anthocephala berlepschi*, sp. nov.—*Bulletin British Ornithologists' Club*, III, November 28, 1893, 8.

Comparison of the new form with *A. floriceps* of the Sierra Nevada de Santa Marta.

1894. CHAPMAN, FRANK M. On the Birds of the Island of Trinidad.—*Bulletin American Museum of Natural History*, VI, January, 1894, 1-86.

Refers incidentally to a Santa Marta specimen of *Pitangus derbianus rufipennis* (page 41).

1895. BOUCARD, ADOLPHE. Genera of Humming Birds. London (1893)-1895, pp. xiv + 412.

This publication was issued in parts, in connection with the same author's monthly publication, the *Humming Bird*. The characteristic species of hummingbirds of the Santa Marta region (as known up to that time) are duly described, and a few other species attributed to the region on various authorities. *Thalurania valenciana* is provisionally described as a new species, the locality assigned being Valencia, Colombia, which would bring it into our region, but it is probable that this is a mistake for Valencia, Venezuela.

1895. SALVADORI, TOMMASO. Catalogue of the Birds in the British Museum. Volume XXVII. London, (December), 1895, pp. xv + 638, pls. 19. *Merganetta columbiana* (page 462) and *Crypturus pileatus* (page 524) are recorded from the Santa Marta region.

1896. SHARPE, R. BOWDLER. Catalogue of the Birds in the British Museum. Volume XXIV. London, (July?), 1896, pp. xii + 795, pls. 7.

Five species of Limicolæ are duly recorded from Santa Marta.

1896. ROBINSON, WIRT, and RICHMOND, CHARLES W. An annotated List of Birds Observed on Margarita Island, and at Guanta and Laguayra, Venezuela.—*Proceedings United States National Museum*, XVIII, August 12, 1896, 649-685.

Gives measurements of a Santa Marta specimen of *Icterus xanthornus* (page 675).

1897. SALVIN, OSBERT, and GODMAN, F. DUCANE. Biologia Centrali-Americana. Aves. Volume II. (London?), December, 1888-February, 1897, pp. 598, pls. 36-60.

Contains references to fourteen species of Central American birds the range of which is stated to extend to Santa Marta, mainly on the authority of Simons.

1897. HARTERT, ERNST J. O. Various Notes on Humming-Birds.—*Ibis*, July, 1897, 423-435.

Gives Santa Marta as a locality for *Phaethornis longirostris*.

1897. SIMON, EUGÈNE. Catalogue des Espèces actuellement connues de la Famille des Trochilidés. Paris, 1897, pp. 46.

Seven species of hummingbirds are given for the Santa Marta region in this paper, which is a nominal list, with the addition of the principal synonyms and range of each form.

1898. SIMON, EUGÈNE. Revision des Genres de la Famille des Trochilidés.—*La Feuille des Jeunes Naturalistes* (3), XXVII, 1897, 85-88, 105-

107, 141-146, 157-158, 173-175, 197-200, 212-214; and XXVIII, 1898, 5-10, 44-46, 123-126, 167-172. Also separately, pp. 1-44.

A popular account of the hummingbirds, with a list of the genera and the more important or well-known species under each. Five Santa Marta species are referred to in the text.

1898. BANGS, OUTRAM. On some birds from Santa Marta, Colombia.—*Proceedings Biological Society of Washington*, XII, June 3, 1898, 131-144. Review, *Auk*, XV, 1898, 339; *Ibis*, 1899, 451-452.

This is the first of a series of papers on the birds of this region by Mr. Bangs, based on the collections made by Mr. Wilmot W. Brown. The present paper deals with nearly seven hundred specimens taken from the middle of December, 1897, to the middle of February, 1898, "within fifteen miles of Santa Marta and at elevations ranging from 500 to nearly 6000 feet, the larger part, however, being from the lowlands." One hundred and thirty-four species are listed, of which ten are here described as new, namely, *Galbula ruficauda pallens*, *Melanerpes wagleri sanctæ-martæ*, *Dendrocicla olivacea anguina*, *Sycalis browni*, *Cyanocompsa concreta sanctæ-martæ*, *Arremonops conirostris canens*, *Piranga faceta*, *Cyclarhis flavipectus canticus*, *Dacnis napæa*, and *Merula incompta*. Critical notes are added in the case of several other species, but otherwise the list is a merely nominal one.

1898. BANGS, OUTRAM. On some birds from Pueblo Viejo, Colombia.—*Proceedings Biological Society of Washington*, XII, August 10, 1898, 157-160. Review, *Auk*, XV, 1898, 339; *Ibis*, 1899, 451-452.

A list of twenty-eight species collected by Mr. Brown "at the village of Pueblo Viejo, in the high Sierra de Santa Marta, Colombia." The new forms described are *Elania browni*, *Automolus rufipectus*, *Buarremon basilicus*, and *Thryothorus latus*. The species of the list are, in the main, those of the Subtropical Zone.

1898. SHARPE, R. BOWDLER. Catalogue of the Birds in the British Museum. Volume XXVI. (Plataleæ and Herodiones). London, (October?), 1898, pp. xvii + 328, pls. 1-5.

Three species of Ardeidæ are recorded from Santa Marta in this volume.

1898. BANGS, OUTRAM. On some birds from the Sierra Nevada de Santa Marta, Colombia.—*Proceedings Biological Society of Washington*, XII, October 31, 1898, 171-182. Review, *Auk*, XVI, 1899, 90-91; *Ibis*, 1899, 451-452.

Sixty-seven species are included in this list, which covers the collections made by Mr. Brown in the Subtropical Zone of the Sierra Nevada, from 5,000 to 8,000 feet, in May and June, 1898. The new forms are *Neocrex colombianus*, *Aulacorhamphus lautus*, *Leucuria (genus novum) phalerata*, *Elania sororia*, *Grallaria spatiator*, *Spinus spinescens capitaneus*, *Diglossa nocticolor*, *Merula phæopyga minus-*

cula, and *Merula gigas cacozela*. Critical remarks on various other forms are also included.

1899. STONE, WITMER. *Oethæca frontalis* (Lafr.) and *Cardinalis granadensis* Lafr.—*Auk*, January, 1899, 78.

The latter (originally described from the Santa Marta region) is "probably a synonym of *C. phænicurus*" (i.e., *phæniceus*).

1899. BANGS, OUTRAM. On the Subspecies of *Manacus manacus* (Linn.).—*Proceedings New England Zoölogical Club*, I, March 31, 1899, 33-37.

A review of the various races of this species, the Santa Marta bird being described under the name *Manacus manacus additivus*.

1899. HARTERT, ERNST J. O. Further Notes on Humming Birds.—*Novitates Zoölogica*, VI, April 15, 1899, 72-75.

Contains a critical note on a Santa Marta specimen of *Metallura smaragdinicollis* in the British Museum, suggesting that it will probably prove to belong to an undescribed form—thus anticipating Mr. Bangs, who gave it a name a few months later.

1899. BANGS, OUTRAM. The Hummingbirds of the Santa Marta Region of Colombia.—*Auk*, XVI, April, 1899, 135-139, pl. 2.

A semi-popular article on the Trochilidæ and certain other species of this region, with some account of the region itself and the ornithological explorations therein of Mr. Brown and his predecessors. A colored plate of *Leucuria phalerata* accompanies the paper.

1899. STONE, WITMER. A Study of the Type Specimens in the Collection of the Academy of Natural Sciences of Philadelphia, with a brief History of the Collection.—*Proceedings Academy of Natural Sciences of Philadelphia*, (May), 1899, 5-62.

Records the type-specimens of *Cardinalis granadensis* and *Dendroplex picirostris*, described by Lafresnaye in 1847 from Rio Hacha (page 51).

1899. SHARPE, R. BOWDLER. A Hand-List of the Genera and Species of Birds. Volume I. London, (July?), 1899, pp. xxi + 303.

Lists *Neocrex colombianus* Bangs (page 106), a species at that time known only from the type-locality.

1899. BANGS, OUTRAM. On some new or rare birds from the Sierra Nevada de Santa Marta, Colombia.—*Proceedings Biological Society of Washington*, XIII, November 11, 1899, 91-108. Review, *Auk*, XVII, 1900, 82; *Ibis*, 1900, 547.

This, the fourth faunal paper by Mr. Bangs on the birds of this region, is based, so he tells us, on a collection of more than thirteen hundred specimens made by Mr. Wilmot W. Brown from the latter part of January until early April, 1899, during which period he visited many stations at altitudes ranging from 3,000 to 15,000 feet. Not all the species secured are listed, but only those of special interest, sixty-two in all, of which no less than thirteen are described as new, namely, *Pharomachrus festatus*, *Metallura districta*,

Octhodiata pernix, *Haplocercus paulus*, *Myiopatis montensis*, *Pipreola aureipectus decora*, *Sclerurus albigularis propinquus*, *Conopophaga browni*, *Scytalopus latebricola*, *Haplospiza nivaria*, *Cinclus rivularis*, *Troglodytes monticola*, and *Merula albiventris fusa*. Although several of these have since been shown to be synonyms, the number of new forms discovered is an indication of the richness of the fauna and of the results to be secured by intensive work.

1899. BANGS, OUTRAM. On a small Collection of Birds from San Sebastian, Colombia.—*Proceedings New England Zoölogical Club*, I, December 27, 1899, 75–80. Review, *Auk*, XVII, 1900, 184.

A list of twenty-nine species, of which one, *Acestrura astreans*, is described as new. San Sebastian and El Mamon, where this collection was made, are situated on the southern slope of the Sierra Nevada, and the former had been visited by Simons twenty years before.

1899. BANGS, OUTRAM. The Gray-breasted Wood Wrens of the Sierra Nevada de Santa Marta.—*Proceedings New England Zoölogical Club*, I, December 27, 1899, 83–84. Review, *Auk*, XVII, 1900, 184.

Two forms of *Henicorhina* are recognized in this region, each having a different altitudinal range. The first is considered to be the same as *H. leucophrys* of Tschudi, while the alticoline form is described as a new species, *H. anachoreta*.

1900. HARTERT, ERNST J. O. Das Tierreich. Eine Zusammenstellung und Kennzeichnung der rezenten Tierformen. 9. Lieferung. Aves. Trochilidæ. Berlin, February, 1900, pp. ix + 254.

Contains references to ten species of this family pertaining to Santa Marta.

1900. SCOTT, WILLIAM EARL DODGE. [New Species of Birds from South America.].—*Bulletin British Ornithologists' Club*, X, April 30, 1900, 62–64.

Describes *Cinclodes oreobates* from the Sierra Nevada de Santa Marta.

1900. BANGS, OUTRAM. A New Dove from the Sierra Nevada de Santa Marta, Colombia.—*Proceedings New England Zoölogical Club*, I, May 14, 1900, 107–109. Review, *Auk*, XVII, 1900, 306; *Ibis* 1901, 128.

Geotrygon linearis infusca, subsp. nov.

1900. SHARPE, R. BOWDLER. A Hand-List of the Genera and Species of Birds, Volume II. London (June?), 1900, pp. xv + 312.

Contains sundry references to characteristic Santa Marta species in the orders of which it treats.

1900. BANGS, OUTRAM. Description of a new Rice Grackle.—*Proceedings New England Zoölogical Club*, II, June 30, 1900, 11–12. Review, *Ibis*, 1901, 322.

Cassidix oryzivora violea, subsp. nov., from La Concepción, Sierra Nevada de Santa Marta.

1900. ALLEN, JOEL A. List of Birds Collected in the District of Santa Marta, Colombia, by Mr. Herbert H. Smith.—*Bulletin American Museum of Natural History*, XIII, August 25, 1900, pp. 117-183. Additions and Corrections, September 17, 1900, pp. 183-184. Review, *Ibis*, 1901, 319-320.

The most important and complete paper on the birds of this region which has appeared up to date. It is based primarily on the collection of 2,834 specimens (with the addition of "several hundred duplicates") made under the direction of Mr. Herbert H. Smith between May 4, 1898, and September 7, 1899, at various stations between sea-level and 8,000 feet. The following quotation from the introduction will indicate the scope and character of the paper: "The Smith Collection of birds numbers 304 species, and includes all but 84 hitherto recorded from this small area. As a matter of interest and convenience to future workers in this field I have interpolated in brackets the species not obtained by Mr. Smith's collectors, and as a matter of geographical interest have deemed it best to give a complete summary of our present knowledge of the distribution of the species definitely known from the district under consideration, and have therefore cited the previous records as given by Messrs. Salvin and Godman and Mr. Outram Bangs." Three hundred and eighty-eight species are here treated, with an indication of the localities and dates for those represented in the Smith collection, while in a supplementary note one other species is added and one subtracted, leaving the total the same. Nine new forms are here described: *Odontophorus atrifrons*, *Myiobius assimilis*, *Octhaeca jesupi*, *Octhaeca olivacea*, *Attila parvirostris*, *Attila rufpectus*, *Grallaria bangsi*, *Myrmotherula sancta-marta*, and *Hylophilus brunneus*. Of these the last two are the same, and there are several other instances where the same species appears under two different names. No account is taken in this paper of the various odd records for sundry Santa Marta forms which appeared prior to 1879. A brief bibliography and a list of Mr. Smith's collecting stations are included in the introduction. For a further analysis of this valuable contribution to the subject see the author's remarks on pages 37-38.

1900. BANGS, OUTRAM. List of Birds Collected by W. W. Brown, Jr., at Loma del Leon, Panama.—*Proceedings New England Zoölogical Club*, II, September 20, 1900, 13-34.

Critical remarks on *Melanerpes wagleri sancta-marta* (page 18), and a reference to *Phanicothraupis fuscicauda erythrolama* as a Santa Marta species (page 30).

1900. ALLEN, JOEL A. North American Birds collected at Santa Marta, Colombia.—*Auk*, XVII, October, 1900, 363-367.

Forty-three species are included. The list is merely an amplification of the matter in the same author's paper published earlier in the year, so far as it relates to the North American migrants.

1900. DWIGHT, JONATHAN, JR. The Moults of the North American Shore Birds.—*Auk*, XVII, October, 1900, 368-385.

As shown by the museum number, the Colombian record quoted for *Actitis macularia* (pages 371 and 375) pertains to a specimen collected at Cienaga.

1900. HELLMAYR, CARL E. Bemerkungen über die neuweltliche Gattung *Polioptila* nebst Beschreibung einer neuen Subspecies aus Peru.—*Novitates Zoologicae*, VII, December 8, 1900, 535-538.

Santa Marta included in the range of *Polioptila nigriceps sclateri*.

1901. BANGS, OUTRAM. Birds of San Miguel Island, Panama.—*Auk*, XVIII, January, 1901, 24-32.

Critical remarks on *Elania sororia* of the Santa Marta region, page 29.

1901. BANGS, OUTRAM. A new Meadowlark from South America.—*Proceedings New England Zoölogical Club*, II, February 15, 1901, 55-56. Review, *Auk*, XVIII, 1901, 281.

Sturnella magna paralius, subsp. nov., from the Sierra Nevada de Santa Marta, is here discriminated from *S. m. meridionalis*.

1901. SHARPE, R. BOWDLER. A Hand-List of the Genera and Species of Birds. Volume III. London, (July?), 1901, pp. xii + 367.

Contains numerous references to the birds of the Santa Marta region.

1901. BANGS, OUTRAM. Notes on the American Rough-winged Swallows, with Description of a New Subspecies.—*Proceedings New England Zoölogical Club*, II, July 31, 1901, 57-60. Review, *Auk*, XVIII, 1901, 406-407.

The form of *Stelgidopteryx* from northern South America is described as *S. ruficollis aqualis*, the type-locality being Santa Marta.

1901. BANGS, OUTRAM. A New Phaethornis from the Santa Marta Region of Colombia.—*Proceedings New England Zoölogical Club*, II, July 31, 1901, 63-65. Review, *Auk*, XVIII, 1901, 406-407.

Phaethornis longirostris susurrus, subsp. nov.

1901. RIDGWAY, ROBERT. The Birds of North and Middle America. Part I.—*Bulletin United States National Museum*, No. 50, October 24, 1901, pp. xxxii + 715, pls. 20. *

Astragalinus psaltria croceus, from "Santa Marta," page 118.

The "province of Santa Marta" is included in the winter range of *Zamelodia ludoviciana* (page 615).

1902. HELLMAYR, CARL E. Revision einiger neotropischen *Turdidae*.—*Journal für Ornithologie*, L, January, 1902, 44-69.

Santa Marta records for several species of *Turdidae* are quoted. *Merula incompta* Bangs is considered a synonym of *Turdus grayi luridus* (Bonaparte).

1902. OBERHOLSER, HARRY C. Catalogue of a Collection of Hummingbirds from Ecuador and Colombia.—*Proceedings United States National Museum*, XXIV, January 18, 1902, 309-342.
Phaethornis longirostris susurrus Bangs from Santa Marta (page 313).
1902. BANGS, OUTRAM. Two New Birds from San Miguel Island, Bay of Panama.—*Proceedings New England Zoölogical Club*, III, March 31, 1902, 71-73.
Refers incidentally to Santa Marta specimens of *Formicivora intermedia* (page 72).
1902. BANGS, OUTRAM. Description of Ten New Birds from the Santa Marta Region of Colombia.—*Proceedings New England Zoölogical Club*, III, March 31, 1902, 81-90. Review, *Ibis*, 1902, 659-660.
Owing to the lack of the necessary material for comparison several species in Mr. Bangs' original lists were not satisfactorily identified at the time, and he here names and describes ten new forms, additional to those described from time to time in other papers. The new forms are *Nyctidromus albicollis gilvus*, *Chloronerpes yucatanensis alleni*, *Xenicopsis anxius*, *Premnoplex coloratus*, *Mionectes olivaceus galbinus*, *Myiopagis placens pallens*, *Onychorhynchus mexicanus fraterculus*, *Microcerculus corrasus*, *Chlorophonia frontalis psittacina*, and *Catamenia alpica*.
1902. VON BERLEPSCH, HANS, and HARTERT, ERNST J. O. The Birds of the Orinoco Region.—*Novitates Zoölogicae*, IX, April 10, 1902, 1-134.
On page 31 (footnote) the authors substitute Santa Marta as the type-locality of *Icterus auricapillus* Cassin.
1902. VON BERLEPSCH, HANS. Beschreibung zweier neuer Drosselformen aus Südamerika.—*Ornithologische Monatsberichte*, X, May, 1902, 69-71.
Critical remarks on *Turdus cacozela* Bangs from Santa Marta.
1902. HARTERT, ERNST J. O. Die mit Sicherheit festgestellten Vögel der Inseln Aruba, Curacao und Bonaire.—*Novitates Zoölogicae*, IX, July 25, 1902, 295-309.
Xanthornus icterus icterus from Santa Marta, page 300.
1902. OBERHOLSER, HARRY C. Some New South American Birds.—*Proceedings United States National Museum*, XXV, August 30, 1902, 59-68.
Contains a detailed description of a specimen in the collection of the Carnegie Museum which is here referred to *Thryophilus albipectus bogotensis* Hellmayr.
1902. RIDGWAY, ROBERT. The Birds of North and Middle America, Part II.—*Bulletin United States National Museum*, No. 50, October 16, 1902, pp. xx + 834, pls. 22.
Contains numerous Santa Marta references, mainly in specifying the range for certain forms or in tables of measurements.
1902. DUBOIS, ALPHONSE. Synopsis Avium. Nouveau Manuel d'Ornithologie. Première Partie. Brussels, 1899-1902, pp. xvi + 729, pls. 1-12.

Published in parts, appearing at various intervals. Numerous Santa Marta references are included, quoted of course from other authorities.

1902. SEEBOHM, HENRY, and SHARPE, R. BOWDLER. A Monograph of the Turdidæ, or Family of Thrushes. London (1898)–1902. Volume I, pp. xi + 337, pls. 1–78. Volume II, pp. ix + 250, pls. 79–149.

This work (for which Sharpe is almost wholly responsible) appeared in parts from 1898 to 1902. It contains references to four Santa Marta species of this family, one of which, *Merula cacozela* Bangs, is figured.

1903. HELLMAYR, CARL E. Einige weitere Bemerkungen über *Polioptila*.—*Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien*, LIII, May 22, 1903, 223–226.

Refers to *Polioptila bilineata* as a bird of Santa Marta (page 225).

1903. SHARPE, R. BOWDLER. A Hand-List of the Genera and Species of Birds. Volume IV. London, (July?), 1903, pp. xii + 391.

Contains sundry Santa Marta references in outlining the distribution of various species of Troglodytidæ, Cinclidæ, Turdidæ, and Vireonidæ.

1903. HELLMAYR, CARL E. Bemerkungen über neotropische Vögel.—*Journal für Ornithologie*, LI, October, 1903, 527–539.

Critical comment on the Santa Marta forms of *Henicorhina*, pages 530–531.

1903. CLARK, AUSTIN H. The Black-winged Palm Tanager.—*Auk*, XX, October, 1903, 398–402.

Santa Marta specimens of this species were examined by the author.

1903. RIDGWAY, ROBERT. Diagnoses of nine new forms of American Birds.—*Proceedings Biological Society of Washington*, XVI, November 30, 1903, 167–169.

Describes *Henicorhina hiliaris bangsi* from the mountains of the Santa Marta region.

1904. OBERHOLSER, HARRY C. A Review of the Wrens of the Genus Troglodytes.—*Proceedings United States National Museum*, XXVII, January 23, 1904, 197–210, pl. 5.

Describes as new *Troglodytes musculus atopus* (page 207), and offers critical remarks on *T. monticola* (page 200), the two forms of this group occurring in the Santa Marta region.

1904. NELSON, EDWARD W. A Revision of the North American Mainland Species of Myiarchus.—*Proceedings Biological Society of Washington*, XVII, March 10, 1904, 21–50.

Gives the Santa Marta region as within the range of *Myiarchus ferox panamensis* and *M. crinitus* (winter). *M. nigriceps* is recorded (page 49) from "San Miguel Island"—by mistake for San Miguel in the Sierra Nevada de Santa Marta.

1904. BANGS, OUTRAM. Two New Subspecies of Tropical American Tyrant Birds.—*Proceedings Biological Society of Washington*, XVII, May 18, 1914, 113-114.
Serpophaga cinerea cana, subsp. nov., from the Sierra Nevada de Santa Marta.
1904. SALVIN, OSBERT, and GODMAN, F. DuCANE. *Biologia Centrali-Americana. Aves. Volume III.* (London?), November, 1897-June, 1904, pp. 510, pls. 61-79.
The only Santa Marta references in this volume are those pertaining to *Parra melanopygia* (page 341) and *Crypturus soui* (page 454).
1904. RIDGWAY, ROBERT. Descriptions of Seven New Species and Subspecies of Birds from Tropical America.—*Smithsonian Miscellaneous Collections*, Quarterly Issue, XLVII, August 6, 1904, 112-113.
Describes *Catharus fuscater sancta-martae*, subsp. nov., from a specimen in the Carnegie Museum labelled El Libano (misprinted "Elheibano").
1904. OBERHOLSER, HARRY C. A Monograph of the Genus *Dendrocincla*.—*Proceedings Academy of Natural Sciences of Philadelphia*, October, 1904, 447-463.
Dendrocincla olivacea anguina Bangs of the Santa Marta region is considered identical with *D. v. lafresnayi* Ridgway (page 457).
1904. COOKE, WELLS W. Distribution and Migration of North American Warblers.—*Bulletin Biological Survey, United States Department of Agriculture*, No. 18, 1904, pp. 142.
Santa Marta records for eighteen species of this family are here quoted, mainly from the papers of Messrs. Allen and Bangs, but a few are based on specimens in the Carnegie Museum not otherwise recorded.
1904. DUBOIS, ALPHONSE. *Synopsis Avium. Nouveau Manuel d'Ornithologie. Deuxième Partie.* Brussels, 1902-1904, pp. x + 731-1339, pls. 13-16.
Contains numerous references to Santa Marta species and records.
1904. RIDGWAY, ROBERT. The Birds of North and Middle America. Part III.—*Bulletin United States National Museum*, No. 50, December 31, 1904, pp. xx + 801, 19 pls.
Several characteristic Santa Marta forms are introduced into the keys to the species which occur in this work, and Santa Marta records for a few others are also quoted.
1905. VON BERLEPSCH, HANS, and HELLMAYR, CARL E. Studien über wenig bekannte Typen neotropischer Vögel.—*Journal für Ornithologie*, LIII, January, 1905, 1-33.
Contains critical remarks on several species of the Santa Marta region. *Elania sororia* Bangs is identified with *E. albivertex* von Pelzeln; *Phyllomyias semifusca* Sclater with *Phaenomyias murina* in-

- comta* (Cabanis and Heine); *Sublegatus incanescens* from Minca (ex Salvin and Godman) with *Phyllomyias griseiceps* (Sclater and Salvin); and the range of *Empidochanes fuscatus cabanisi* is given as including Santa Marta.
1905. HELLMAYR, CARL E. [On Four New Species of South American Birds.]—*Bulletin British Ornithologists' Club*, XV, March 24, 1905, 54-57.
Compares his new species of *Automolus* with *A. rufpectus* of the Santa Marta region (page 55).
1905. STEJNEGER, LEONHARD. The Birds of the Genus *Cinclus* and their Geographical Distribution.—*Smithsonian Miscellaneous Collections*, Quarterly Issue, XLVIII, April 5, 1905, 421-430.
Lists *C. rivularis* Bangs among the South American species of the genus.
1905. BANGS, OUTRAM. Descriptions of Seven New Subspecies of American Birds.—*Proceedings Biological Society of Washington*, XVIII, June 9, 1905, 151-156.
Describes *Crypturus soui mustelinus*, subsp. nov., from the Santa Marta region.
1905. THAYER, JOHN E., and BANGS, OUTRAM. The Mammals and Birds of the Pearl Islands, Bay of Panama.—*Bulletin Museum of Comparative Zoölogy*, XLVI, September, 1905, 137-160.
Contains a few incidental references to Santa Marta birds.
1905. ALLEN, JOEL A. Supplementary Notes on Birds Collected in the Santa Marta District, Colombia, by Herbert H. Smith, with Descriptions of Nests and Eggs.—*Bulletin American Museum of Natural History*, XXI, October 4, 1905, 275-295. Review, *Ibis*, 1906, 187-188.
In this paper Dr. Allen undertakes to bring his former list (published in 1900) up to date, first, by recording a number of additional species (seven) and specimens received from Mr. Smith, and secondly, by correcting certain of his earlier identifications. He follows with a list of seventeen new forms which had in the meantime been described from this region (mainly by Mr. Bangs), giving their collation with the names he had originally used. The bulk of the paper consists of very full and accurate descriptions of the nests and eggs of forty-two species of the birds of this region, based on material forwarded by Mr. Smith. (These descriptions have been quoted, more or less fully, in the present paper.) The description of the nest and eggs of "*Megarhynchus pitangus*" on page 283, however, almost certainly applies instead to those of *Pitangus sulphuratus rufipennis*.
1906. THAYER, JOHN E., and BANGS, OUTRAM. Vertebrates from the Savanna of Panama. III. Aves.—*Bulletin Museum of Comparative Zoölogy*, XLVI, January, 1906, 213-224.
Contains a few incidental references to Santa Marta species.

1906. HELLMAYR, CARL E. A Revision of the Species of the Genus *Pipra*.—*Ibis*, January, 1906, 1-46.
Cites Santa Marta records for *Pipra erythrocephala* (page 21).
1906. HELLMAYR, CARL E. On the Birds of the Island of Trinidad.—*Novitates Zoologicae*, XIII, February 24, 1906, 1-60.
Santa Marta records for several species are incidentally mentioned.
1906. HELLMAYR, CARL E. Revision der Spix'schen Typen brasilianischer Vögel.—*Abhandlungen der Königlich Bayerischen Akademie der Wissenschaften*, II Kl., XXII, May 20, 1906, 563-726, pls. 1-2.
On page 659 Santa Marta is included in the range of *Thamnophilus naevius atrinucha*.
1906. HELLMAYR, CARL E. [On Two New Subspecies of Neotropical Birds.]—*Bulletin British Ornithologists' Club*, XVI, May 28, 1906, 90-92.
Merula cacozela Bangs is here called *Turdus fuscater cacozela*.
1906. HELLMAYR, CARL E. Critical Notes on the Types of little-known Species of Neotropical Birds. [I.]—*Novitates Zoologicae*, XIII, July 10, 1906, 305-352.
Refers to *Leptasthenura andicola andicola* as a bird of the Santa Marta region (page 333).
1906. CHERRIE, GEORGE K. Species of Birds collected at St. Matthews Cocoa Estate, Heights of Aripo, Trinidad.—*Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin*, I, July 16, 1906, 187-192.
Critical remarks on a series of *Pachyrhamphus cinereiventris* from Santa Marta (page 190).
1906. RIDGWAY, ROBERT. Descriptions of some new forms of Oligomyodian Birds.—*Proceedings Biological Society of Washington*, XIX, September 6, 1906, 115-120.
Describes *Tityra semifasciata columbiana*, subsp. nov., from the Santa Marta region (page 119).
1906. HELLMAYR, CARL E. Exhibition of a male specimen of *Leucuria phalerata* from Colombia.—*Bulletin British Ornithologists' Club*, XIX, December 31, 1906, 29.
Considers it a typical *Helianthea*.
1907. VON BERLEPSCH, HANS. On the Genus *Elania* Sundev.—*Ornis*, XIV, February, 1907, 372-448.
The Santa Marta records for the several species of this group are critically discussed. *E. sororia* Bangs is synonymized with *E. albivertex* von Pelzeln, and *E. browni* Bangs with *E. pudica* Sclater. *Myiopagis placens pallens* Bangs becomes *Elania viridicata placens* Sclater.
1907. VON BERLEPSCH, HANS. Studien über Tyranniden.—*Ornis*, XIV, February, 1907, 463-493.
Several species of the family are referred to as coming from the Santa Marta region. *Myiopatis montensis* Bangs is here referred

- to *Mecocerculus leucophrys* (Lafresnaye and D'Orbigny), while some of the other described forms are reduced to subspecific rank.
1907. BANGS, OUTRAM. On the Wood Rails, Genus *Aramides*, occurring north of Panama.—*American Naturalist*, XLI, March, 1907, 177-187.
Gives measurements for a specimen of *Aramides axillaris* from Chirua, in the Santa Marta region (page 179).
1907. HELLMAYR, CARL E. On a Collection of Birds from Teffé, Rio Solimões, Brazil.—*Novitates Zoologicae*, XIV, March 20, 1907, 40-91.
Refers to Santa Marta localities in specifying the range of *Psittacula guianensis viridissima* (page 88).
1907. BANGS, OUTRAM. A new Spiny-tail from the Sierra Nevada de Santa Marta, Colombia.—*Proceedings Biological Society of Washington*, XX, April 18, 1907, 55-56. Review, *Ibis*, 1907, 637.
Siptornis hellmayri is the name here given to the Santa Marta bird, which proves to be distinct from *S. antisimensis*.
1907. RIDGWAY, ROBERT. The Birds of North and Middle America. Part IV. —*Bulletin United States National Museum*, No. 50, July 1, 1907, pp. xxii + 973, pls. 34.
Contains diagnoses, critical notes, measurements, and references bearing on a considerable number of Santa Marta species of Turridæ, Mimidæ, Tyrannidæ, Pipridæ, and Cotingidæ.
1907. LOWE, PERCY R. On the Birds of Margarita Island, Venezuela.—*Ibis*, October, 1907, 547-570.
Contains a note on a Santa Marta specimen of *Careba luteola* (page 566).
1908. CHERRIE, GEORGE K. On a Second Small Collection of Birds from the Island of Trinidad.—*Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin*, I, March, 1908, 353-370.
Contains a reference to Santa Marta specimens of *Megarynchus pitangua*, and a correction of Dr. Allen's description of the nest and eggs of that species.
1908. MILLER, WALDRON DEWITT. A Review of the Manakins of the Genus *Chiroxiphia*.—*Bulletin American Museum of Natural History*, XXIV, May 2, 1908, 331-343.
Santa Marta specimens of *Chiroxiphia lanceolata* are incidentally mentioned.
1908. HELLMAYR, CARL E. An Account of the Birds collected by Mons. G. A. Baer in the State of Goyaz, Brazil.—*Novitates Zoologicae*, XV, June 25, 1898, 13-102.
An incidental reference to *Thryophilus albipectus galbraithi* as a Santa Marta species (page 16), and a critical note on the Santa Marta record of *Sublegatus fasciatus*.
1908. VON BERLEPSCH, HANS. On the Birds of Cayenne. (Part I.)—*Novitates Zoologicae*, XV, June 25, 1898, 103-164.

Contains incidental references to Santa Marta specimens of *Turdus albiventer* (page 105) and *Phaenomyias murina incomta* (page 135).

1908. BANGS, OUTRAM. Notes on Birds from Western Colombia.—*Proceedings Biological Society of Washington*, XXI, June 27, 1908, 157-161.

Contains a diagnosis of *Premnoplex brunnescens coloratus*, and a note on *Henicorhina hiliaris bangsi* of the Santa Marta region.

1908. BANGS, OUTRAM. A new Tyrant-bird from the Santa Marta Region of Colombia.—*Proceedings Biological Society of Washington*, XXI, July 27, 1903, 163. Review, *Auk*, XXVI, 1909, 320; *Ibis*, 1909, 536-537.

Rhynchocyclus sulphureus exortivus, subsp. nov.

1908. STONE, WITMER. A Review of the Genus *Piaya* Lesson.—*Proceedings Academy of Natural Sciences of Philadelphia*, October, 1908, 492-501.

Lists Santa Marta specimens of *Piaya cayana columbiana* (page 498).

1908. RIDGWAY, ROBERT. Diagnoses of some new forms of Neotropical Birds.—*Proceedings Biological Society of Washington*, XXI, October 20, 1908, 191-195.

Contains a description of *Gymnocichla nudiceps sancta-marta*, subsp. nov., the type being an alleged Santa Marta specimen.

1908. HELLMAYR, CARL E. Übersicht der südamerikanischen Arten der Gattung *Chaetura*.—*Verhandlungen Ornithologischen Gesellschaft in Bayern*, VIII, "1907," November 14, 1908, 144-161.

Dr. Allen's Santa Marta record for *Chaetura spinicauda* is here placed under *C. s. fumosa*.

1909. RIDGWAY, ROBERT. New Genera, Species, and Subspecies of Formicariidae, Furnariidae, and Dendrocolaptidae.—*Proceedings Biological Society of Washington*, XXII, April 17, 1909, 69-74.

Contains a note on the Santa Marta race of *Dendrocolaptes validus* (page 73).

1909. CHERRIE, GEORGE K. New Birds from the Orinoco Region and from Trinidad.—*Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin*, I, June 30, 1909, 387-390.

Lists specimens from Santa Marta under his newly described *Formicivora cano-fumosus*.

1909. SHARPE, R. BOWDLER. A Hand-List of the Genera and Species of Birds. Volume V. London, (August?), 1909, pp. xx + 694.

Contains references to certain Santa Marta species of Mniotiltidae, Fringillidae, Cerebidae, Tanagridae, and Icteridae.

1909. SIMON, EUGÈNE. Notes Critiques sur les Trochilidés. II. Sur le *Thalurania calina* Bourcier et le *Sapphironia luminosa* Lawrence.—*Revue Française d'Ornithologie*, I, October, 1909, 65-66.

- Discusses the case of *Thalurania calina* Bourcier, originally described as a Santa Marta bird.
1910. BANGS, OUTRAM. A new Humming Bird from the Sierra Nevada de Santa Marta, Colombia.—*Proceedings Biological Society of Washington*, XXIII, June 24, 1910, 105.
Lafresnayea liriopæ, sp. nov.
1910. COOKE, WELLS W. Distribution and Migration of North American Shorebirds.—*Bulletin Biological Survey, United States Department of Agriculture*, No. 35, 1910, pp. 100, pls. 4.
Santa Marta records for four species of this group are here cited.
1910. CARRIKER, MELBOURNE A., JR. An Annotated List of the Birds of Costa Rica including Cocos Island.—*Annals Carnegie Museum*, VI, "August 29," September 7, 1910, 314-915, 1 pl.
Contains several incidental references to Santa Marta specimens in the collection of the Carnegie Museum.
1910. HELLMAYR, CARL E. The Birds of the Rio Madeira.—*Novitates Zoologicae*, XVII, December 15, 1910, 257-428.
Rhynchocyclus flaviventris flaviventris from Santa Marta (page 296).
1910. HELLMAYR, CARL E. Fam[ily] Pipridæ.—*Wytsman's Genera Avium*, part 9, 1910, pp. 1-31, 3 pls.
Three species of this family are specifically credited with a Santa Marta record in their respective ranges.
1911. HELLMAYR, CARL E. Description de quelques Formes Nouvelles d'Oiseaux de l'Amérique Méridionale.—*Revue Française d'Ornithologie*, II, February 7, 1911, 23-26.
Cites Santa Marta in assigning the range of *Colaptes pectoratus* (page 25).
1911. HELLMAYR, CARL E. Description de Trois Nouvelles Espèces d'Oiseaux des Familles de Dendrocolaptidés et Formicariidés.—*Revue Française d'Ornithologie*, II, April, 1911, 49-51.
Contains an incidental reference to *Philydor montanus anxius* (Bangs) of the Santa Marta region (page 49).
1911. BANGS, OUTRAM. Descriptions of New American Birds.—*Proceedings Biological Society of Washington*, XXIV, June 23, 1911, 187-190.
Gives measurements for a specimen of *Antrostomus rufus rufus* from the "Santa Marta Mts."
1911. TODD, W. E. CLYDE, and WORTHINGTON, WILLIS W. A Contribution to the Ornithology of the Bahama Islands.—*Annals Carnegie Museum*, VII, October 31, 1911, 384-464, pl. 84.
Contains critical notes on Santa Marta specimens of *Butorides virescens* (page 410) and *Ochodromus wilsonius* (page 416).
1911. VON BERLEPSCH, HANS. Revision der Tanagriden.—*Verhandlungen V. Internationalen Ornithologen-Kongresses in Berlin*, 1911, 1001-1161.
A list of the described species of Tanagridæ (including several

genera now considered Fringilline), giving the original reference and the range of each form in considerable detail. The Santa Marta records for the various species are included in nearly every case, and the type-locality of *Arremon schlegeli* is fixed on the basis of one such record.

1911. RIDGWAY, ROBERT. The Birds of North and Middle America. Part V. —*Bulletin United States National Museum*, No. 50, November 29, 1911, pp. xxiii + 859, pls. 33.

Contains more or less extended references, diagnoses, etc., for various species of Formicariidæ, Furnariidæ, Dendrocolaptidæ, Trochilidæ, Micropodidæ, and Trogonidæ from Santa Marta.

1911. BURNS, FRANK L. A Monograph of the Broad-winged Hawk.—*Wilson Bulletin*, XVIII, December, 1911, 143-320, pls. 10.

Cites Santa Marta records for this species, pages 194-195.

1911. HELLMAYR, CARL E. A Contribution to the Ornithology of Western Colombia.—*Proceedings Zoölogical Society of London*, December, 1911, 1084-1213.

Contains a number of Santa Marta references interspersed, mainly in connection with the range of certain species.

1912. HARTERT, ERNST J. O. On a new subspecies of Manakin (*Chiromachæris manacus trinitatis*) from Trinidad.—*Bulletin British Ornithologists' Club*, XXIX, January 24, 1912, 63-64.

Refers incidentally to the Santa Marta form of the same group.

1912. TODD, W. E. CLYDE. Descriptions of Seventeen New Neotropical Birds.—*Annals Carnegie Museum*, VIII, May 20, 1912, 198-214.

Contains a description of *Penelope colombiana*, sp. nov., and critical remarks on several other species from the Santa Marta region.

1912. VON MADARASZ, JULIUS. Beschreibung eines neuen Spechtes aus Columbien.—*Ornithologische Monatsberichte*, XX, June, 1912, 97-98.

Chrysophilus ujhelyii, sp. nov., from Aracataca, in the Santa Marta region.

1912. CHAPMAN, FRANK M. Diagnoses of Apparently New Colombian Birds. —*Bulletin American Museum of Natural History*, XXXI, July 23, 1912, 139-166, pl. 12.

In this paper there are described the following new forms from the Santa Marta region, all from specimens in the Smith Collection: *Chamaepetes sanctæ-marthæ*, *Picolaptes locrymiger sanctæ-marthæ*, *Myiodynastes chrysocephalus intermedius*, *Tyranniscus chrysops minimus*, *Tyranniscus nigricapillus flavimentum*, *Platypirita*. A few other Santa Marta species are incidentally mentioned.

1912. OBERHOLSER, HARRY C. A revision of the subspecies of the Green

Heron (*Butorides virescens* [Linnæus]).—*Proceedings United States National Museum*, XLII, August 29, 1912, 529-577.

Santa Marta specimens of the Green Heron are assigned to the form here described as *Butorides virescens hypernotius*.

1912. HELLMAYR, CARL E., and VON SEILERN, JOSEPH. Beiträge zur Ornithologie von Venezuela.—*Archiv für Naturgeschichte*, LXXVIII, Abteilung A, September 20, 1912, 34-166.

A number of Santa Marta species are here referred to at more or less length, in connection with critical notes on the birds of northern Venezuela.

1912. HELLMAYR, CARL E. Zoölogische Ergebnisse einer Reise in das Mündungsgebiet des Amazonas herausgegeben von Lorenz Müller. Aves.—*Abhandlungen der Königlich Bayerischen Akademie der Wissenschaften*, Math.-phys. Kl., XXVI, November 15, 1912, 1-142.

Refers to Santa Marta in specifying the range of *Emberizoides herbicola spheunurus* (page 105).

1912. BRABOURNE, WYNDHAM W., and CHUBB, CHARLES. The Birds of South America. Volume I. London, December, 1912, pp. xix + 504, 1 map.

In this volume such of the various species and races described from the Santa Marta region (up to 1912) as are recognized by the authors are duly listed in their proper places, with an indication of the place of original publication and the type-locality. Errors in citation are unfortunately present, as in the case of *Thamnophilus atrinucha* (page 189), which is erroneously said to have been described from Santa Marta.

1913. VON MADARASZ, JULIUS. Neue Vögel aus Columbien.—*Ornithologisches Monatsberichte*, XXI, February, 1913, 22-23.

The two new forms are *Synallaxis fuscifrons* and *Donacobius brachypterus*, both from the Santa Marta region.

1913. HELLMAYR, CARL E. Critical Notes on the Types of little-known Species of Neotropical Birds. Part II.—*Novitates Zoologica*, XX, February 24, 1913, 227-256.

Hylophilus brunneus Allen is here shown to be the female of *Myrmotherula schisticolor sanctæ-martæ* of the same author, *Oc-thaca olivacea* Allen to be the same as *Tyranniscus improb-us* Selater and Salvin, *Conopophaga browni* Bangs to be *Grallaricula ferrugineipectus* Selater, and the *Saucerottia* from the Santa Marta region is given as *S. saucerottiei warscewiczii*.

1913. COOKE, WELLS W. Distribution and Migration of North American Herons and their Allies.—*Bulletin Biological Survey, United States Department of Agriculture*, No. 45, 1913, pp. 70.

Quotes a Santa Marta record for *Hydranassa tricolor ruficollis* (page 52).

1913. HELLMAYR, CARL E., and VON SEILERN, JOSEPH. Ueber eine neue

Tangare aus Trinidad.—*Verhandlungen der Ornithologischen Gesellschaft in Bayern*, XI, April 15, 1913, 254-255.

Lists the several races of *Sporathraupis cyanocephala*, recognizing the form from Santa Marta under the name *S. c. margarita* Chapman.

1913. TODD, W. E. CLYDE. A Revision of the Genus *Chamepelia*.—*Annals Carnegie Museum*, VIII, May 8, 1913, 507-603.

Cites the Santa Marta records and specimens examined of the species of this group which occur in the region.

1913. TODD, W. E. CLYDE. Preliminary Diagnoses of Apparently New Birds from Tropical America.—*Proceedings Biological Society of Washington*, XXVI, August 8, 1913, 169-174.

The following new forms from the Santa Marta region are here briefly characterized: *Catamenia oreophila*, *Hemispingus basilicus*, *Planesticus olivater sanctæ-martæ*, *Rhynchocyclus flaviventris aurentus*, *Leptopogon amaurocephalus diversus*, *Orodynastes straticollis columbianus*, and *Pyrhura viridicata*. Of these names the *Orodynastes* is now relegated to synonymy.

1913. HARTERT, ERNST J. O. Exhibition and description of five new sub-species of birds.—*Bulletin British Ornithologists' Club*, XXXIII, December 27, 1913, 76-79.

Calls attention to the probable error in the alleged type-locality of *Euphonia fulvicrissa*, supposed to have come from Santa Marta.

1914. CHAPMAN, FRANK M. Diagnoses of apparently new Colombian Birds, II.—*Bulletin American Museum of Natural History*, XXXIII, March 19, 1914, 167-192, pl. 13.

Describes the north Colombian and Panama race of *Craspedoprion æquinoctialis* under the name *C. æ. flavus* (page 175), the type selected coming from Onaca, in the Santa Marta region. A few other Santa Marta species are incidentally mentioned.

1914. RIDGWAY, ROBERT. The Birds of North and Middle America. Part VI.—*Bulletin United States National Museum*, No. 50, April 8, 1914, pp. xx + 882, pls. 36.

Contains diagnoses, references, etc., for various species of Piciidæ, Ramphastidæ, Bucconidæ, Alcedinidæ, Momotidæ, Caprimulgidæ, and Bubonidæ.

1914. APOLINAR MARÍA, HERMANO. El cernicalo.—*Boletín de la Sociedad de Ciencias Naturales del Instituto de La Salle*, II, May 1, 1914, 100-109.

A popular account of the Sparrow Hawk as observed in Colombia, in the course of which Santa Marta localities are quoted.

1914. CHAPMAN, FRANK M. Descriptions of New Birds from Ecuador.—*Bulletin American Museum of Natural History*, XXXIII, May 22, 1914, 317-322.

Gives measurements and color-characters for Santa Marta specimens of *Tityra semifasciata columbiana* (page 324).

1914. BRABOURNE, WYNDHAM W., and CHUBB, CHARLES. A key to the Species of the Genus *Crypturus*.—*Annals and Magazine of Natural History*, (8), XIV, October, 1914, 319-322.

Recognizes the Santa Marta form as *C. soui mustelinus*.

1914. APOLINAR MARIA, HERMANO. Especies nuevas.—*Boletin de la Sociedad de Ciencias Naturales del Instituto de La Salle*, II, October, 1914, 243-248.

A notice of the new forms described by Dr. Chapman in the *Bulletin American Museum of Natural History*, XXXI, 1912, 139-166, and XXXIII, 1914, 167-192.

1914. CHAPMAN, FRANK M. Diagnoses of apparently new Colombian Birds, III.—*Bulletin American Museum of Natural History*, XXXIII, November 21, 1914, 603-637, pl. 13.

Contains critical remarks on, measurements, etc., of several Santa Marta species, considered in connection with allied forms described from various other parts of Colombia.

1915. TODD, W. E. CLYDE. Preliminary Diagnoses of Apparently New South American Birds.—*Proceedings Biological Society of Washington*, XXVIII, April 13, 1915, 79-82.

New forms described from the Santa Marta region are: *Pheugopedius fasciato-ventris cognatus*, *Hypolophus pulchellus phainoleucus*, *Erionotus punctatus subcinereus*, *Drymophila caudata hellmayri*, *Formicarius moniliger virescens*, *Grallaria varia carmelita*, *Setopagis heterurus*, *Pionus sordidus saturatus*, *Psittacula passerina cyanophanes*, and *Aratinga aruginosa occidentalis*. Several of these are now considered invalid.

1915. CHAPMAN, FRANK M. Descriptions of Proposed New Birds from Central and South America.—*Bulletin American Museum of Natural History*, XXXIV, May 27, 1915, 363-388.

Contains an incidental reference to Santa Marta specimens of *Chamepelia rufipennis* (page 367).

1915. [APOLINAR MARIA, HERMANO.] Especies nuevas.—*Boletin de la Ciencias Naturales del Instituto de La Salle*, July, 1915, 87-88.

A notice of the new forms described in *Proceedings Biological Society of Washington*, XXVIII, 1915, 79-82.

1915. CORY, CHARLES B. Notes on South American Birds, with Descriptions of New Subspecies.—*Field Museum of Natural History Ornithological Series*, I, August 7, 1915, 303-335.

Contains a synopsis of the races of *Chrysoptilus punctigula* (pages 305-306), including *C. p. ujhelyii* from the Santa Marta region.

1915. CHAPMAN, FRANK M. The More Northern Species of the Genus *Scytalopus* Gould.—*Auk*, XXXII, October, 1915, 406-423.

A critical review of the more northern species of this difficult

group, including *S. latebricola* and *S. sanctæ-martæ* (sp. nov.) of the Santa Marta region.

1915. TODD, W. E. CLYDE. Preliminary Diagnoses of Seven Apparently New Neotropical Birds.—*Proceedings Biological Society of Washington*, XXVIII, November 29, 1915, 169-170.

Contains a brief description of *Crax annulata*, sp. nov., from the Santa Marta region.

1915. CHAPMAN, FRANK M. Diagnoses of Apparently New Colombian Birds. IV.—*Bulletin American Museum of Natural History*, XXXIV, December 30, 1915, 635-662.

Contains several references to Santa Marta species in connection with the descriptions of new forms from other regions.

1916. TODD, W. E. CLYDE. The Birds of the Isle of Pines.—*Annals Carnegie Museum*, X, "January 31," February 17, 1916, 146-296, pls. 22-27.

The Colombian specimens of *Pelecanus occidentalis* (page 173) and *Florida carulea* (page 180) referred to in this paper are from the Santa Marta region, as well as the specimen of *Cathartes aura* mentioned on page 192.

1916. APOLINAR MARIA, HERMANO. Especies nuevas. Aves.—*Boletín de la Sociedad de Ciencias Naturales del Instituto de La Salle*, IV, April, 1916, 36-38.

A notice of the new forms described in *Bulletin American Museum of Natural History*, XXXIV, 1915, 635-662. Santa Marta is included in the range of *Crypturus soui mustelinus* (page 37) and *Herpetotheres cachinnans fulvescens* (page 38).

1916. RIDGWAY, ROBERT. The Birds of North and Middle America. Part VII.—*Bulletin United States National Museum*, No. 50, May 5, 1916, pp. xiii + 543, pls. 44.

Contains diagnoses, measurements, references, etc., for a number of Santa Marta species of Cuculidæ, Psittacidæ, and Columbidae. New locality records for certain species occur in the range of some forms as here given, based mainly on material in the collection of the Carnegie Museum.

1916. TODD, W. E. CLYDE. Preliminary Diagnoses of Fifteen Apparently New Neotropical Birds.—*Proceedings Biological Society of Washington*, XXIX, June 6, 1916, 95-98.

The Santa Marta forms here described are: *Nemosia pileata hypoleuca*, *Basileuterus cabanisi indignus*, *Attila idiotes*, *Leptasthenura andicola extima*, *Synallaxis albescens perpallida*, and *Glauucidium brasilianum medianum*.

1916. CORY, CHARLES B. Descriptions of apparently New South American Birds, with Notes on some little-known Species.—*Field Museum of Natural History Ornithological Series*, I, August 30, 1916, 337-346.

- Contains a reference to Santa Marta specimens of *Pachyrhamphus niger cinereiventris* (page 343).
1916. CHERRIE, GEORGE K. A Contribution to the Ornithology of the Orinoco Region.—*Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin*, II, September 1, 1916, 133-374.
- Contains a few references, *passim*, to Santa Marta species: *Heleodytes griseus* (page 145), *Tanagra trinitatis* (page 170), and *Ceromacra nigricans* (page 287).
1916. APOLINAR MARIA, HERMANO. Especies nuevas.—*Boletín de la Sociedad de Ciencias Naturales del Instituto de La Salle*, IV, September, 1916, 117-118.
- Contains a notice of the new forms described in *Proceedings Biological Society of Washington*, XXIX, 1916, 95-98.
1916. HARTERT, ERNST J. O. The Distribution of *Columba gymnoptalma*.—*Novitates Zoologicae*, XXIII, December 1, 1916, 341.
- Quotes from a letter received from W. E. Clyde Todd, calling attention to certain mainland records and specimens of this pigeon, of which Santa Marta specimens are extant.
1917. TODD, W. E. CLYDE. Preliminary Diagnoses of Apparently New Birds from Colombia and Bolivia.—*Proceedings Biological Society of Washington*, XXX, January 22, 1917, 3-6.
- Contains brief descriptions of the following new forms from the Santa Marta region: *Ostinops decumanus melanterus*, *Icterus mesomelas carrikeri*, and *Eupsychortyx cristatus littoralis*.
1917. STONE, WITMER. A new Hummingbird from Colombia.—*Proceedings Academy of Natural Sciences of Philadelphia*, June 8, 1917, 203-204.
- Lepidopygia lillie*, sp. nov., from Punto Caiman, in the Santa Marta region.
1917. HARTERT, ERNST J. O.; and GOODSON, ARTHUR. Notes and Descriptions of South American Birds.—*Novitates Zoologicae*, XXIV, August 31, 1917, 410-419.
- Critical remarks on *Rhynchocyclus sulphureus exortivus* (page 415).
1917. [APOLINAR MARIA, HERMANO.] Especies nuevas.—*Boletín de la Sociedad de Ciencias del Instituto de La Salle*, VI, November, 1917, 145-149.
- Contains a notice of the new forms described in *Proceedings of the Biological Society of Washington*, XXX, 1917, 3-6.
1917. CHAPMAN, FRANK M. The Distribution of Bird-Life in Colombia: A Contribution to a Biological Survey of South America.—*Bulletin American Museum of Natural History*, XXVI, November, 1917, 1-729, pls. 41.
- Scattered through the pages of this work are numerous references to Santa Marta species of birds, mainly in connection with the distribution of these or allied forms in other parts of Colombia.

The matter of their local distribution and relationships, as well as the faunal position of the region, are discussed only briefly, these questions having been left for the authors of the present paper to treat in detail. The Santa Marta records for the various species are usually quoted from Dr. Allen's paper published in 1900.

1918. CORY, CHARLES B. Catalogue of Birds of the Americas. Part II, No. 1.—*Field Museum of Natural History, Zoölogical Series*, XIII, March, 1918, 1-315, pl. 1.

Includes references to various Santa Marta species of *Bubonidae*, *Psittacidae*, *Momotidae*, *Caprimulgidae*, and *Trochilidae*. Original descriptions for forms recently described are quoted.

1918. BANGS, OUTRAM, and PENARD, THOMAS E. Notes on a Collection of Surinam Birds.—*Bulletin Museum of Comparative Zoölogy*, LXII, April, 1918, 25-93.

In this paper a number of new forms are described from various other parts of tropical America, among which is *Rupornis magnirostris insidiatrix* from the Santa Marta region (page 36). The distinctness of the Santa Marta form of *Saltator olivascens* is also pointed out (page 91).

1918. BANGS, OUTRAM, and NOBLE, G. KINGSLEY. List of Birds Collected on the Harvard Peruvian Expedition of 1916.—*Auk*, October, 1918, 442-463.

Refers to Santa Marta specimens of *Polyborus cheriway* (page 443) and *Pygochelidon cyanoleuca* (page 458).

1919. CORY, CHARLES B. New Forms of South American Birds and Proposed New Subgenera.—*Auk*, XXXVI, April, 1919, 273-276.

Xenicopsoides, subgenus novum, proposed to include (among others) *Xenicopsis anxius* Bangs.

1919. BANGS, OUTRAM, and PENARD, THOMAS E. Some Critical Notes on Birds.—*Bulletin Museum of Comparative Zoölogy*, LXIII, June, 1919, 21-40.

Includes a review of the races of *Saltator striatipictus*, Santa Marta specimens being referred to the typical form (page 33). Note on *Ostinops decumanus melanterus*, page 39.

1919. RIDGWAY, ROBERT. The Birds of North and Middle America. Part VIII.—*Bulletin U. S. National Museum*, No. 50, VIII, June 26, 1919, pp. xvi + 852, pls. 34.

Includes Santa Marta records for *Jacana nigra* (page 15), *Thalasseus eurynathus* (page 474), and *Phaëtusa chloripoda* (page 541).

1919. HELLMAYER, CARL E. Miscellanea Ornithologica IV. . . XII. Vier neue Formen aus dem tropischen Amerika.—*Verhandlungen der Ornithologischen Gesellschaft in Bayern*, XIV, June 26, 1919, 126-133.

Contains a description of *Catharus melpomene sierræ* subsp. nov., from the Sierra Nevada de Santa Marta.

1919. TODD, W. E. CLYDE. Descriptions of Apparently New Neotropical Birds.—*Proceedings Biological Society of Washington*, XXXII, June 27, 1919, 113-118.

Contains original descriptions of *Nonnula frontalis pallescens* and *Crypturus idoneus* from the Santa Marta region.

1919. CORY, CHARLES B. A Review of Reichenbach's Genera *Siptornis* and *Cranioleuca*, with Descriptions of New Allied Genera and a Subgenus.—*Proceedings Biological Society of Washington*, XXXII, September 30, 1919, 149-160.

Contains measurements and diagnoses for the two Santa Marta species of this group, both of which are referred to *Cranioleuca*.

1919. CORY, CHARLES B. The Relationships and Geographical Distribution of the Species and Races belonging to the Genus *Rhynchocyclus*.—*Proceedings Biological Society of Washington*, XXXII, December 31, 1919, 217-224.

The two Santa Marta species of this group are critically discussed in the course of this paper, *R. flaviventris aurulentus* being considered untenable.

1919. CORY, CHARLES B. Catalogue of Birds of the Americas. Part II, No. 2.—*Field Museum of Natural History, Zoölogical Series*, XIII, December 31, 1919, 1-607, pl. 2.

Includes references to various Santa Marta species of Trogonidae, Ramphastidae, Galbulidae, and Picidae.

1920. SWANN, H. KIRKE. A Synoptical List of the Accipitres. Part III. London, January 20, 1920, pp. 75-114 + 2.

Contains a reference to the original description of *Rupornis magnirostris insidiatrix*.

1920. BANGS, OUTRAM, and PENARD, THOMAS E. Two New American Hawks.—*Proceedings New England Zoölogical Club*, VII, February 19, 1920, 45-47.

Refers to a Santa Marta specimen of *Accipiter superciliosus exitiosus*, subsp. nov.

1919. CHAPMAN, FRANK M. Descriptions of Proposed New Birds from Peru, Bolivia, Brazil, and Colombia.—*Proceedings Biological Society of Washington*, XXXII, December 31, 1919, 253-268.

Contains a note on *Thripobrotus lacrymiger sanctæ-martæ* (page 262).

1920. TODD, W. E. CLYDE. A Revision of the Genus *Eupsychortyx*.—*Auk*, XXXVII, April, 1920, 189-220, pls. 5-6.

Lists specimens and records for the several forms of this group which occur in the Santa Marta region, with critical remarks on each.

1920. CHAPMAN, FRANK M. Unusual Types of apparent Geographic Variation

in Color and of Individual Variation in Size exhibited by *Ostinops decumanus*.—*Proceedings Biological Society of Washington*, XXXIII, July 24, 1920, 25-32.

Critical remarks on *Ostinops decumanus melanterus* (page 25).

1920. HELLMAYR, CARL E. Ein Beitrag zur Ornithologie von Südost-Peru.—*Archiv für Naturgeschichte*. LXXXV, "1919," A 10, November, 1920, 1-131.

Refers incidentally to *Mionectes olivaceus galbinus* (page 52) and *Myiodynastes chrysocephalus intermedius* (page 57), described from the Santa Marta region.

1920. HELLMAYR, CARL E. Miscellanea Ornithologica V.—*Verhandlungen der Ornithologischen Gesellschaft in Bayern*, XIV, December 11, 1920, 281-287.

Tanagra viridissima given as ranging to Santa Marta (page 282), and *Microrhophias grisea intermedia* recorded from the same place (page 287).

1920. TODD, W. E. CLYDE. Descriptions of Apparently New South American Birds.—*Proceedings Biological Society of Washington*, XXXIII, December 30, 1920, 71-76.

Sayornis latirostris fumigatus, *Furnarius leucopus exilis*, and *Veniliornis oleaginus exsul*, new subspecies, from the Santa Marta region.

1921. MILLER, WALDRON DEWITT, and GRISCOM, LUDLOW. Notes on *Ortalis vetula* and its Allies.—*Auk*, XXXVIII, January, 1921, 44-50.

Contains critical remarks on the status of *Ortalida ruficrissa* Sclater and Salvin, which is considered specifically distinct from *Ortalis vetula*.

1921. BANGS, OUTRAM, and PENARD, THOMAS E. Notes on some American Birds, chiefly Neotropical.—*Bulletin Museum of Comparative Zoölogy*, LXIV, January, 1921, 365-397.

Refers to Santa Marta specimens of *Crotophaga sulcirostris sulcirostris*, *Dendroplex picus picirostris*, *Tyrannus melancholicus chloronotus*, and *Pachyrhamphus polychropterus cinereiventris*, the last named being discussed critically.

1921. BANGS, OUTRAM, and PENARD, THOMAS E. Descriptions of Six New Subspecies of American Birds.—*Proceedings Biological Society of Washington*, XXXIV, June 30, 1921, 89-92.

Describes *Tangara viridissima toddi*, subsp. nov., and refers to specimens of *Mecocerculus leucophrys nigriceps*, both from the Santa Marta region.

1921. SIMON, EUGÈNE. Histoire Naturelle des Trochilidæ (Synopsis et Catalogue). Paris, 1921, pp. vi + 416.

Eighteen species of hummingbirds are ascribed to the Santa Marta region in this volume.

1921. HELLMAYR, CARL E. Review of the Birds Collected by Alcide D'Or-

bigny. Part II.—*Novitates Zoologicae*, XXVIII, September 20, 1921, 230–276.

. Critical notes on *Planesticus fuscater cacozelus* (page 234).

1921. CHAPMAN, FRANK M. Descriptions of Proposed New Birds from Colombia, Ecuador, Peru, and Brazil.—*American Museum Novitates*, No. 18, September 22, 1921, 1–12.

Refers to specimens of *Siptornis wyatti wyatti* from the Sierra Nevada de Santa Marta, and to the range of *Leptasthenura andicola extima* of the same region.

1921. MILLER, WALDRON DEWITT, and GRISCOM, LUDLOW. Descriptions of Proposed New Birds from Central America, with Notes on other little-known Forms.—*American Museum Novitates*, No. 25, December 7, 1921, 1–13, with errata slip.

Ictinia plumbea vagans, subsp. nov., is attributed to the Santa Marta region (page 7), also *Gampsonyx swainsoni leona* Chubb.

1921. TODD, W. E. CLYDE. Studies in the Tyrannidae. I. A Revision of the Genus *Pipromorpha*.—*Proceedings Biological Society of Washington*, XXXIV, December 21, 1921, 173–192.

Santa Marta records for *Pipromorpha oleaginea parca*, page 186.

1922. CHAPMAN, FRANK M. Descriptions of Apparently New Birds from Colombia, Ecuador, and Argentina.—*American Museum Novitates*, No. 31, March 2, 1922, 1–8.

Specimens of *Rupornis magnirostris insidiatrix* from Santa Marta localities are recorded (page 4).

1922. HELLMAYR, CARL E. Neue Formen der Gattung *Scytalopus*.—*Ornithologische Monatsberichte*, XXX, No. 3, May 1, 1922, 54–59.

Lists specimens of this group from the Santa Marta region, in connection with the description of three new forms from Colombia and Venezuela.

1922. OSGOOD, WILFRED H., and CONOVER, BOARDMAN. Game Birds from Northwestern Venezuela.—*Field Museum of Natural History Zoological Series*, XII, No. 3, August 28, 1922, 19–47, pl. I.

Contains a number of references to Santa Marta species.

1922. BANGS, OUTRAM, and BARBOUR, THOMAS. Birds from Darien.—*Bulletin Museum of Comparative Zoology*, LXV, No. 6, September, 1922, 191–229.

Several references to Santa Marta species and specimens are included. *Pipra erythrocephala actinosa*, subsp. nov., is given as the form from the Santa Marta region.

SUPPLEMENT.

During the summer of 1920 the junior author, in company with Prof. Alexander G. Ruthven of the University of Michigan, was able to make a reconnoissance of the valley region east and south of the Sierra Nevada, heretofore unworked by any other collector save Simons. Although birds were not the main object of this expedition, one hundred and one specimens were actually collected between July 14 and August 8, all of which are duly listed under the head of the various species represented. Many others were shot for identification, but not preserved, while the list of species observed at the several localities visited has added many new records of value in working out the distribution of certain species. Mr. Carriker's account of this trip, although arriving too late to be incorporated in the introduction, but containing as it does so much of importance on the physical and faunal aspects of the country, is of such interest that we propose to quote it at some length. It is entitled "Description of the Route from Rio Hacha to Fundación, skirting the south side of the Sierra Nevada."

"After leaving Rio Hacha the road continues over dry sandy wastes, either level or very slightly rolling, the vegetation consisting of thorny scrub and cacti, with scattering trees of medium size and of wide-branching character, nearly all of which are of acacia-like types, or else deciduous varieties, such as characterize the 'dry forest' of the semi-arid coast lands around Santa Marta. This type of vegetation continues unbroken until the Rio Camarones is reached at Barba-coas, which is merely a collection of a half-dozen miserable huts. Before reaching this point, and just at the edge of the flood-plain of the river, is a cattle-ranch and travellers' station called Arroya de Arenas, where the first stop was made, some collecting done, and many observations taken. An accident to one of my hands prevented the preparation of many skins here, but a complete record was made of all species observed. There is little change in the avifauna here from that of Rio Hacha, except for the presence of certain species found in the forest of the flood-plain, and in the heavier woodland of the hills to the westward. From the coast to this point there is a gradual

but steady rise, the elevation being about 600 feet. After crossing the river at Barbacoas there is a very perceptible change in the character of the vegetation. Acacia-like forms are still present in large numbers, also cacti, but mixed with numerous other new kinds of trees, while the whole growth becomes more luxuriant. The sand and whitish hard-pan of the country to the north changes to clay and alluvial deposits to a great extent, while rock formations are more in evidence, and the country becomes decidedly hilly, the trail following the general course of the river upward. About twelve miles south of Barbacoas the little village of Treinta is reached. At one time Treinta must have been a flourishing place, with not less than two hundred houses, but today it presents a most dilapidated appearance of decay and abandon. It is well up in the edge of the foothills, and in all the little narrow valleys hereabouts the woodland growth is heavy, and of about the same character as that of the lower foothills back of Santa Marta, although the species of trees are not all the same. From here the trail ascends more rapidly, until at about ten miles we reach the little settlement of Loma Larga, lying at an elevation of about 2,500 feet. Here the whole country is heavily wooded (except where clearings have been made), the forest growth being much heavier than in the hills back of Santa Marta at the same elevation. This forest is undoubtedly continuous with that of the foothills of the north coast, while the fauna is very similar to that of the hills back of Dibulla and Don Diego. Bird-life (and animal life in general) was very abundant, both in species and individuals. I think the only species taken here which had not been noted either at Rio Hacha, Dibulla, or Don Diego was *Myrmeciza longipes panamensis*, a species which had heretofore been found only on the west side.

"From Loma Larga to the summit of the range the ascent is more precipitous, while the forest growth increases in luxuriance. Nowhere else in the Sierra Nevada do I remember having seen such a beautiful forest growth as here. The trees are mostly of one species (not found on the south or west slopes), and they grow to truly magnificent proportions. So dense is this forest that little or no undergrowth is present, and so little sunlight comes through that it is continual twilight below. Bird-life was nevertheless fairly abundant, even the terrestrial and sub-terrestrial forms. It was in this forest, near the crest of the range, where I heard a *Formicarius* whistling,

which was probably some form of *F. rufpectus*, since this is the only species of the genus to be expected in the Subtropical Zone. The crest is about 5,000 feet here, but the trail crosses through a small gap, some 500 feet lower down. Just after passing the gap, but still in the heavy forest belt, I took the specimen of *Dysithamnus olivaceus*.

"Within a quarter of a mile below the crest of the range, on the south side, there is a rapid and striking change in the vegetation, marking our re-entrance into the Tropical Zone. The forest gives way to a straggling growth of low, open woodland, choked with undergrowth. Deciduous trees soon appear, and when an elevation of about 3,000 feet is reached in the descent acacias and cacti put in an appearance, gradually replacing all other forms, until when the foothills along the Rio Rancheria are reached the flora (and fauna) is typically that of the Arid Tropical. The trail crosses the river just at the point where it breaks out of the hills, and from there downward to Fonseca its flood-plain is very broad and heavily wooded, although the trees are very largely of the 'dry forest' types. Birds were abundant around Fonseca, especially in the forest of the flood-plain, where several new forms were first observed, among them *Helcodytes nuchalis*. With the exception of this one species, however, the birds found here belonged to the Rio Hacha-Dibulla fauna, those inhabiting the flood-plain woodland more nearly corresponding to those recorded from Dibulla, while those of the outlying scrub were the same as were noted at Rio Hacha.

"The road from Fonseca to San Juan de Cesar closely skirts the lower edge of the foothills, which rise abruptly from a level plain. The vegetation of this plain is precisely that of the region about Rio Hachá, and the avifauna is practically the same. The slopes and ridges of the foothills are here mostly bare clay and rock or covered with coarse grasses, but there is a light growth of woodland present in the narrow valleys and ravines. About midway between the two towns just mentioned the divide between the Rio Rancheria and Rio Cesar is crossed, but it is almost imperceptible. San Juan de Cesar is also near the foothills, and the river here is small. The surrounding country, except for the narrow flood-plain, is covered with the same cacti and dry, acacia-like vegetation, with a few scattered tracts of open land, superficially resembling savannas.

"From San Juan de Cesar we took the road to Valle de Upar by way of Badillo, thus keeping on the side of the valley next the Sierra Nevada. No change was observed in the faunal or floral conditions over this part of the route, except on the very broad flood-plain of the Rio Badillo, which is a fine large stream. This flood-plain supports a forest of a different type from that of the Rio Rancheria at Fonseca, and apparently belonging rather to the Magdalenan. Beyond this flood-plain, which is here not less than five or six miles wide, the trail emerges upon the plain, where the cacti and scrub again prevail, and it contrives to closely skirt the foothills, which everywhere rise abruptly from the plain, and are still bare and barren for the most part. The road strikes the flood-plain of the Rio Guatapuri a few miles above Valle de Upar, and follows it down to the town, which lies on the southwest bank of the stream. This flood-plain woodland was quite luxuriant in many parts, and gave every appearance of supporting a rich and varied bird-fauna, but I was greatly disappointed to find so little there. Birds proved to be much less abundant than at Fonseca, both in species and individuals, and after a whole day spent in tramping about the country, with little to show for it, we decided to continue our journey at once. Valle de Upar seems to be more or less in a neutral zone as regards what may be designated respectively as the Magdalenan and Goajiran faunas. Numerous species of the latter fauna disappear here, and a few of the former come in, but not many, so that on the whole the fauna is very poor, being neither one nor the other.

"After leaving Valle de Upar the trail continues through a low, open woodland, largely composed of acacia-like forms, with some cacti, for about six or eight miles, when again a luxuriant flood-plain forest is encountered, extending up to the very base of the foothills. This forest becomes richer as the road continues southward, but is broken by parallel ridges or table-lands running approximately north and south, from a few hundred yards to a mile or more in width. These conditions persist until Valencia de Jesus is passed, when the forest changes again, becoming typically Magdalenan in appearance, except that it does not present so humid an aspect as on the west side of the Sierra Nevada. This forest would seem to be continuous down to the Rio Cesar, whence it follows that stream to the Magdalena. Once

this heavy forest is reached the avifauna changes abruptly, both in abundance and variety. We stopped at a little farm and travellers' station about six miles beyond Valencia, in the very heart of this magnificent forest, where two days were spent in collecting and observing. This forest belt ends abruptly about three miles west of this point, where low scrub and open woodland alternate with tracts of semi-savanna country. The foothills and mountain slopes become decidedly more wooded as we proceed, and there are no bare rock-strewn slopes such as occur farther to the northeast, all land not wooded being covered with savanna grasses, more or less luxuriant. As the trail continues southward, the areas of savanna on the plain become more and more extensive, until they occupy all the space between the small watercourses coming down from the hills. The banks of these little streams are invariably wooded, but this woodland rarely extends out upon the plain. These savannas, however, do not extend down toward the Rio Cesar for more than four or five miles from the edge of the foothills, the region below that being heavily forested, the same as near Valencia. As Camperucho is neared, the savannas become larger and more typical, with true savanna grasses appearing for the first time. At Camperucho the trail swings abruptly around to the northwest, crossing the lower reaches of the foothills of the long southwest spur-range of the Sierra Nevada. Here the country is rolling hills, covered with grasses, with trees in the ravines and little valleys. It was on these typical savannas that we encountered the first Meadowlarks (*Sturnella magna paralius*) seen on the trip, while farther north we had seen many individuals of *Ædicnemus bistratus vocifer* and *Belonopterus cayennensis cayennensis*. After crossing the low hills at Camperucho and dropping down on the plain which lies near the Rio Garupal, many small flocks of the large ibis, *Theristicus caudatus*, were seen scattered over the savanna.

"After crossing the Rio Garupal the road again goes through broken, hilly savanna country, then drops down into the heavy forest of the western lowlands, which forest continues unbroken, although of varying character, northward to Fundación. In some places it is of a lower, more open type, with many deciduous trees, giving it slightly the aspect of the so-called 'dry forest,' while in the valley of the Rio Ariguani, and for some distance to the southward, it is very heavy and



dense, a truly magnificent lowland tropical forest, strictly Magdalenan in character. North of the Ariguani the land is hilly and broken, not with regular ranges of hills, but apparently becoming a haphazard jumble of low hills and winding ravines, with a poor gravelly soil. As seen from the plain at their base, the foothills and the whole southwest flank of the Sierra Nevada are densely forested right up to timber-line."

CARNEGIE MUSEUM,
October 5, 1922.

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